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ESTABLISHED 1891 PUBLISHED EVERY SATURDAY

VOL. XXVII., PART II. No. 1405.] JOHANNESBURG, TRANSVAAL, SATURDAY, AUG. 31, 1918. [WEEKLY, PRICE

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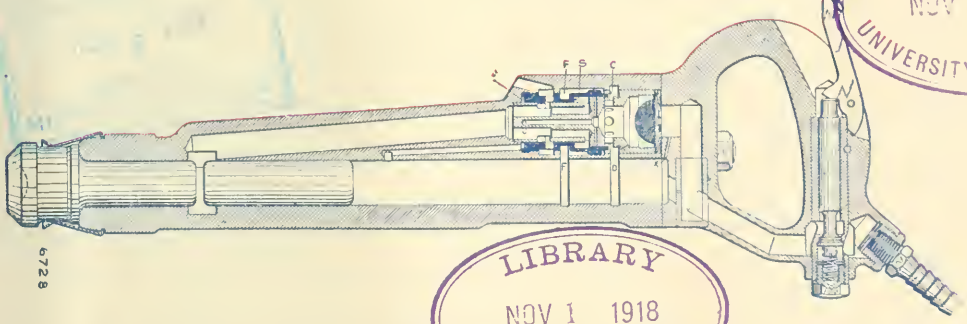


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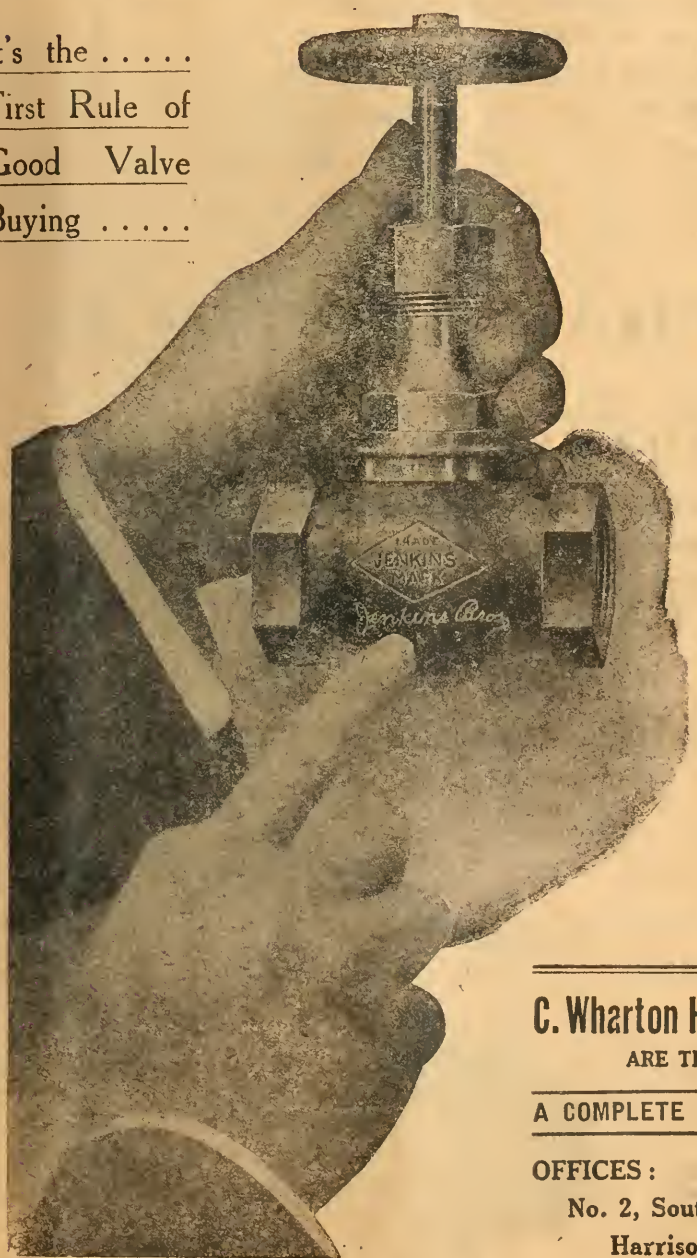


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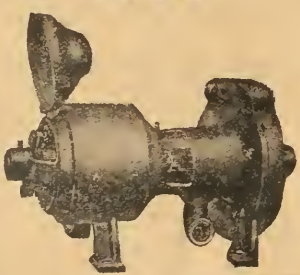

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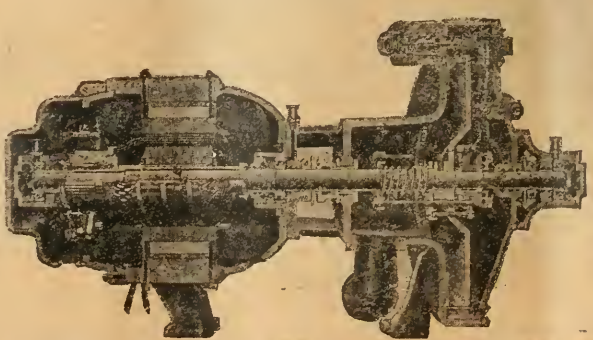

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1. In the first place it is pointed out that the options of 180,000 £1 shares at par authorised in terms of circular dated 25th August, 1916, and confirmed at an Extraordinary General Meeting of Shareholders of the Company, held on 12th September, 1916, were under call until 31st September, 1918.

2. At an Extraordinary General Meeting of Shareholders held on 25th April, 1918, the terms of the option certificates in respect of the above 180,000 shares were extended as under :—

(a) Any holder of a number of option certificates taking up 25 per cent. of the shares he holds under option by virtue of such option certificates, not later than the 31st day of December, 1918, shall be entitled to pay for such 25 per cent. in ten equal monthly instalments, the first of such instalments to be paid not later than the 31st day of December, 1918, and in equal consecutive monthly instalments until the whole of the sum represented by the said 25 per cent. of the shares shall be paid.

(b) Any holder of a number of option certificates shall, provided he has taken up 25 per cent. of the shares he held under option as set forth in (a) hereof be entitled to take up a further 25 per cent. of such shares he held under option not later than the 31st day of December, 1919, and to pay for same on such terms as the Board may decide.

(c) Any holder of a number of option certificates shall, provided he has taken up 50 per cent. of the shares he held under option as set forth in (a) and (b) hereof, be entitled to take up the remaining 50 per cent. of the option shares not later than the 31st day of December, 1920, and to pay for same on such terms as the Board may decide.

The following example will make matters quite clear :—

If the holder of an option certificate over one hundred shares takes up twenty-five of such option shares on or before December 31st, 1918, then such holder shall be entitled to retain his option on the remaining seventy-five shares until December 31st, 1919, and if on or before that date he exercises his option in respect of not less than twenty-five such shares, he shall be entitled to an option over the remainder (*i.e.*, 50 shares) of the original one hundred shares until the 31st December, 1920.

By Order of the Board,

THE CONSOLIDATED GOLD FIELDS OF SOUTH AFRICA, LIMITED,
Secretaries.
per F. H. DOWN.

Head Office :
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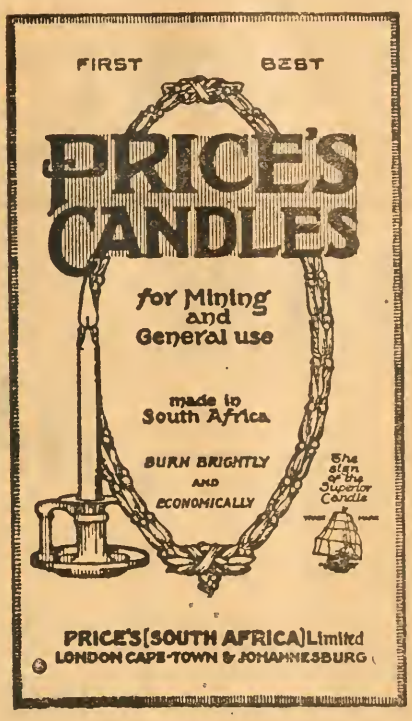


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General Mining Buildings,
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1. To receive and consider the Balance Sheet and Profit and Loss Account, and the Directors' and Auditors' Reports for the year ended 31st December, 1917.
2. To elect a Director in place of Mr. Martin Luebeck, who retires in terms of the Articles of Association, but who is eligible, and offers himself for re-election.
3. To appoint an Auditor or Auditors for the ensuing year, and to fix the remuneration of the retiring Auditors.
4. To transact any other business which ought to be transacted at an Ordinary General Meeting.

The Share Transfer Books of the Corporation will be closed as follows :—

(a) At the Head Office from the 23rd of September to the 10th of October, 1918, both days inclusive.
(b) In London from the 23rd of August to the 31st of August, 1918, both days inclusive.

Holders of Share Warrants to Bearer desiring to be present or represented at the Meeting should deposit their Shares at the places and within the times following :—

Johannesburg :—At the Head Office of the Corporation, General Mining Buildings, at least three days before the time appointed for the holding of the meeting; or

London :—At the London Office (Transfer Department) Winchester House, Old Broad Street, E.C.;

Paris :—At the Paris Office, 29 Rue Taitbout; at the Bank de l'Union Parisienne, 7, Rue Chauchat; at least thirty days before the date appointed for the holding of the Meeting.

By Order of the Board.

H. W. DALTON,
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*South African Mines, Commerce and Industries.*

ESTABLISHED 1891.

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# Notes and News.

**New Industrial Bank.**

The statement by the Minister of Mines and Industries on Thursday to the effect that arrangements had been almost completed by prominent South African financiers to organise credit facilities for local industries is generally welcomed. What the Minister meant, doubtless, was that an Industrial Bank was in contemplation that would have the support and encouragement of the Government, without, however, being a Government institution. Mr. Malan said he was informed that the Industrial Development Company, Ltd., which started a little while ago with a capital of £100,000 had had no difficulty in placing its money. He was informed that it was now the intention of the company to increase its capital. After careful consideration, the advisers of the Imperial Government had decided that it was not a sound policy to back up industrial enterprises with its money—which was, after all, the taxpayers' money. The Union Government had decided to follow that example. He admitted that many local industries had laboured under acute difficulties owing to the lack of capital. A simple way to find capital was wanted. South Africa, at the present moment, had a plethora of comparatively idle capital. What was wanted was organization. The Government recently had been in negotiation with prominent financiers within the Union, and he was able to announce that they could expect practical developments within a very short time. The arrangements to be made ought to go a long way towards establishing supreme confidence in the future of the country. He trusted it would not be long before the Government could announce to the public the result of the arrangements made. He was sure the arrangements would be well received on all hands.

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**Reduction Workers' Strike at Randfontein.**

During the week the reduction workers at the Randfontein Central went on strike, and up to the time of going to press, remain out. The big mill is idle, and over one hundred European workers are affected. On Thursday afternoon Messrs. N. Toomey and J. Forrester Brown, of the S.A. Mine Workers' Union, met the strikers, and it was recommended that the men should return to work pending a reference of the whole of the points at issue to the Board of Reference. The men decided to take a ballot on the point, and it was decided by a majority that the strike should be maintained. The question at issue seems to be the interpretation of the wages agreement.

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**Zaaiplaats Tin Position.**

The Zaaiplaats directors' report for the quarter ended 31st July, 1918, shows that the mill ran on 79 days during the quarter, crushing 4,535 short tons, the duty per stamp being 10·6 tons per 24 hours. The output for the quarter amounted to 158 long tons of concentrate, assaying 70 per cent. metallic tin. The results of working show an estimated profit of £26,227 0s. 9d., excluding directors' fees and Government taxes, made up as follows:—Estimated profit for the three months' operations, £26,237 13s. 6d.; less adjustments of estimated values of previous consignments, £10 12s. 6d.; profit declared for the quarter, £26 227 0s. 9d. 131 long tons of refined tin, assaying 99·5 per cent. metallic tin, were produced by the smelter during the quarter. The expenditure on capital account amounted to £681 18s. 10d. The satisfactory developments reported during the previous quarter have been fully maintained in No. 13 section. In addition to the main face proper there is an extensive occurrence of ore on the fissure, which is now more strongly marked than at any time during the past. During the quarter the connection was established between No. 6 and No. 13 sections. The small pipe discovered in the drive during the previous quarter has become more definite in shape and character. The values are still low, but the existence of a well-marked ring indicates that a change may be expected. During the quarter 4,791 tons of ore were mined and disposed of as follows:—Waste sorted, 256 short

tons; sent to mill, 4,535 short tons; total, 4,791 short tons. The labour supply was not sufficient for all work which might have been undertaken, but an improvement in the position is expected shortly. The option which the company held from the T.C.L. Company over portions of the farms "Groenfontein" and "Roodepoort" was exercised during the quarter. The property, which is situated in the valley adjoining the company's original property, is 27·75 acres in extent, and contains, apart from any unknown ore bodies that may exist, a large quantity of high grade alluvium. Arrangements for the equipment of the ground are well in hand, and it is hoped that active operations will commence in the course of the next two months.

* * * *

**A Conference on the Cold Question.**

Arising from Sir Lionel Phillips's recent speeches on the gold question, negotiations are reported to be in progress for an international conference on the subject. The chief problem for consideration will be to ascertain the increase of the value of gold. According to Reuter, the City Editor of the *Daily Chronicle* says the London Stock Exchange is of opinion that the problem of helping the low-grade gold mines in the Empire will be solved by the Imperial Government agreeing to take over the whole production of gold for a period of five years at a price higher than the standard price and resell it to the Mint at the standard price, recouping its losses by a profit on a note issue.

* * * *

**Mine Ambulance Competition: Underground Workers' Shield.**

The sixth annual competition for the floating trophy presented by the Chemical, Metallurgical and Mining Society was held at the City Deep last Sunday, under the auspices of the S.A. Red Cross Society. Eighteen teams competed, and Sir R. Kotzé and Mr. C. J. Grey were among the spectators. The competition was divided into three sections, and the leading team in each section underwent a further test on the surface. The results are:—Section X: Crown Mines No. 5 Shaft, 124; Wolhuter, 107·2; Village Deep, 89·3. Section Y: Crown Mines No. 4 Shaft, 132; Luipaardsvlei, 126; Robinson B, 115. Section Z: City Deep, 122·1; E.R.P.M., Hercules, 115; Robinson A, 108. As the result of the final test Crown Mines No. 4 Shaft took the shield and silver medals, and City Deep was second.

* * * *

**A Half-Year's Diamond Output.**

The total diamond production of South Africa for the six months ended June 30th, was 1,410,837 carats, valued at £3,921,934. The details published in statistical returns of the Mines Department for July, show that the Transvaal produced 446,411 carats, of which 412,900 carats were from the Pretoria district and 33,498 from the river diggings. The Cape returned 847,538 carats, Kimberley being responsible for 815,131, of the total and the Free State 116,887 carats, of which 94,255 came from the Fauresmith district. The half-yearly production is up to the average for last year, when the total output was 2,902,416 carats and the value £7,713,810.

* * * *

**The Petrol Shortage.**

In last week's *Union Gazette* the appointment is approved of the following as members of the Petrol Distribution Committee of the Witwatersrand: Messrs. J. A. Vaughan, Chief Inspector of Machinery, chairman; F. C. Sturrock, Johannesburg Chamber of Commerce; A. J. Shimwell, South African Society of Motor Traders (Witwatersrand Section); P. McLaren, Vacuum Oil Company; A. Dawson, British Imperial Oil Company; and A. F. Keen, Texas Company; with Mr. G. Hamilton as secretary. For the Pretoria area the members of the Distribution Committee are: Messrs. F. W. Knightly, Government Printer, chairman; H. N. Lloyd, Inspector South African Police; A. H. Fleming, Pretoria Chamber of Commerce; C. Jones, Vacuum Oil Company; E. G. Donet, British Imperial Oil Company; and W. S. Ferguson, Texas Company; with Mr. M. P. Everitt as secretary.

**A Coal Discovery Near Delagoa Bay.**

From Lourenco Marques comes news of the discovery of what is described as a coal equal to that of Witbank. The find is about 58 miles from Lourenco Marques by rail to Moamba on the line to the Transvaal and thence by road. The discovery was made in the course of sinking a well. Nineteen claims have been pegged by 11 different persons, five of them British Indians. Applications for registration will be open for 90 days. It is understood that the coal has been examined by experts from Johannesburg, who report the presence of coal and petroleum. All the peggers are members of a company which has been formed. Arrangements have been made for sinking a number of boreholes at an early date.

* * * *

**Successful Tenderers for Tokai Timber.**

The Union Government recently called for tenders for the purchase of 125 acres of timber at the Tokai plantation. That portion of the plantation which was to be sold was divided into five groups, and the following are the successful tenderers:—Corner House, Johannesburg, Groups 1, 2 and 4; Timbers, Ltd., Group 3; and S.A.R., Salt River, Group 5. It is understood that the purchase price represents a total of £60,000, but it is estimated that, in addition, the successful tenderers will have to spend between them no less than £40,000 in cutting and trucking the timber, which is *pinus insignus*. The timber bought by the Corner House will be brought to the Rand for use as mine props.

* * * *

**July Mineral Returns.**

The mineral production of the Union for July was valued at £4,178,568, a decrease of £18,014, compared with the previous month. The gold output represented £3,136,213, silver £13,447, diamonds £645,996, coal £204,622, tin £62,669, and other base minerals £25,621. The coal output of 900,121 tons is the best for the past nine months and showed an increase of 77,842 tons on the June figure, and in cash £28,523. Thirty-three collieries in the Transvaal produced 594,032 tons, which realised £151,663, three collieries in the Cape were responsible for 455 tons, of the value of £363, four in the Free State, 77,021 tons of the value of £21,941, and 25 in Natal, 228,613 tons representing £120,655. The labour returns show that 32,185 whites and 266,113 coloured people were engaged in mining in the Union during July, the former being an increase of 75 and the latter a decrease of 3,507 on the June figures.

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**The Whitley Committee on Compulsory Arbitration.**

In a further report on the relations between employers and employees in the United Kingdom, the Whitley Committee declare definitely against any system of compulsory arbitration. The grounds for this decision are that it is not generally desired by employers and employed, that it has not proved a successful method of avoiding strikes during the war, and that it would be less likely to be successful in time of peace. The Committee also pronounce against any scheme of conciliation which would compulsorily suspend a strike or lock-out pending an inquiry. They, however, advocate the continuance of the present machinery for voluntary conciliation and arbitration, and hope that the setting up of joint industrial councils will tend to the growth of such machinery. There should also be some means for holding an independent inquiry into the circumstances of a dispute, and for making an authoritative pronouncement on it, without the compulsory power of delaying the strike or lock-out. Their main constructive suggestion is that a Standing Arbitration Council should be established on the lines of the present temporary Committee on Production. To this council disputants would be able voluntarily to refer such differences as they are themselves unable to settle. They suggest, further, that single arbitrators should be available for less important cases which could be heard locally, and that the Standing Arbitration Council should take steps to secure the co-ordination of arbitrators' decisions. The Committee are opposed to the enforcement of awards and agreements by means of monetary penalties.

**The Provincial Gold Profits Tax.**

Attached to the latest quarterly reports of the Rand Mines-Central Mining group of companies is the following: "A draft of the Provincial Gold Profits Tax Ordinance, 1918, purporting to levy a tax on the taxable profits in excess of ten per cent. of the gross revenue derived from the production of gold within the Province of the Transvaal, was gazetted on the 3rd July, 1918. This Ordinance, which was passed by the Transvaal Provincial Council on the 25th June, 1918, has not been gazetted in its final form or as having been assented to by His Excellency, the Governor-General. No provision has been made in the attached accounts for the tax which may be imposed under this Ordinance. In the event of the Ordinance becoming law the Chamber of Mines proposes to take legal action with the view of testing the authority of the Transvaal Provincial Council to levy such taxation."

* * * *

**The Position of Copper.**

Copper continues under strict Imperial Government control, and there is no free market in England. All the copper that comes to that country passes through what Mr. T. V. Anthony calls "The Government clearing house," and is distributed at fixed rates. The production in 1917 was roundly 1,400,000 tons, or about 1½ per cent. more than in 1916. United States' refineries contributed 900,000, and their output at present is about 90,000 tons per month. About 400,000 tons are expected to go this year to Europe for the use of the Allies. Production at present is barely sufficient to meet demand, and working costs have greatly increased. Mr. Anthony says that in 1916 the average cost of American copper, placed f.o.b. New York, did not exceed 55 per ton, but in 1917 it was 70, and to-day it is between 75 and 80. After the war the price is likely to be maintained, and it is improbable, so great will be the demand, there will be any decline.

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**Southern Van Ryn Option Certificates.**

The attention of the Board of Directors of the Southern Van Ryn having been drawn to some misconception which appears to exist in regard to the option rights, to dispose of any uncertainty in regard thereto, it is pointed out in the first place that the options on 180,000 £1 shares at par authorised in terms of circular dated 25th August, 1916, and confirmed at an extraordinary general meeting of shareholders of the company held on 12th September, 1916, were under call until 31st December, 1918. At an extraordinary general meeting of shareholders held on 25th April, 1916, the terms of the option certificates in respect of the above 180,000 shares were extended as under:—(a) Any holder of a number of option certificates taking up twenty-five per cent. of the shares he holds under option by virtue of such option certificates, not later than the 31st day of December, 1918, shall be entitled to pay for such twenty-five per cent. in ten equal monthly instalments, the first of such instalments to be paid not later than the 31st day of December, 1918, and in equal consecutive monthly instalments until the whole of the sum represented by the said twenty-five per cent. of the shares shall be paid. (b) Any holder of a number of option certificates shall, provided he has taken up twenty-five per cent. of the shares be held under option as set forth in (a) hereof be entitled to take up a further twenty-five per cent. of such shares he held under option not later than the 31st day of December, 1919, and to pay for same on such terms as the Board may decide. (c) Any holder of a number of option certificates shall, provided he has taken up fifty per cent. of the shares he held under option as set forth in (a) and (b) hereof, be entitled to take up the remaining fifty per cent. of the option shares not later than the 31st day of December, 1920, and to pay for same on such terms as the Board may decide. The following example will make matters quite clear:—If the holder of an option certificate over one hundred shares takes up twenty-five of such option shares on or before December 31st, 1918, then such holder shall be entitled to retain his option on the remaining seventy-five shares until December 31st, 1919, and if on or before that date he exercises his option in respect of not less than twenty-five such shares, he shall be entitled to an option over the remainder (*i.e.*, 50 shares) of the original one hundred shares until the 31st December, 1920.

# TOPICS OF THE WEEK.

## MINES AND INDUSTRIES.

The presence of the Minister of Mines and Industries in Johannesburg this week, in connection with mining and other industries calls attention to the functions of the enlarged department over which the Minister presides, and the question of separating those functions. To the Secretary of the Department, Mr. Warington Smyth, we are indebted for the following rough outline of the principal matters falling within its scope. These are:—(a) Conditions of employment and safety measures against accident; health statistics. (b) Wages and piece-work rates and alterations therein; industrial controversies and disputes. (c) Raw materials, information regarding prices, sources, cost of freight and transport, etc. (d) Marketing of products, home markets, and oversea, etc. One of the items on the agenda of the recent Convention of S.A. Manufacturers dealt with the question of a portfolio of Commerce and Industry, and appeared to suggest that the Department should be separate from the Department of Mines. Mr. Warington Smyth gave several reasons for thinking that this would be a mistake and for suggesting that the present organization under which the mining industry was under the same portfolio as the manufacturing industries was a wise one. He recalled that until a few years ago the mining industry was far and away our greatest industry in every respect. In the days of the Transvaal Republic, gold mining was the one industry which had to be considered and legislated for. The Department already deals with factories in so far as machinery inspection is concerned. The Mines Department also deals, through the Chief Inspector of Explosives and his staff, with the explosives factories of the Union. Mr. Warington Smyth added: "Let me give you an illustration of how practical questions connected with industrial matters affect many branches of the Mines Department now under the one portfolio of 'Mines and Industries.' Take a question like that which arose recently in regard to the shortage of glycerine for explosives purposes. This question directly affected the explosives manufactories, and we had to obtain estimates of stocks through the Chief Inspector of Explosives. It affected the Chamber of Mines, with whom negotiations were necessary, and also the Industries Section, which, in turn, availed itself of assistance and advice from the Scientific and Technical Committee. At the same time the shipping aspect was dealt with by the Imports and Export Department." Mr. Warington Smyth took as another instance the question of iron ore deposits. "In such a case," he said, "we may have to consult the Government Mining Engineer and the Inspector of Mines acting under him regarding facilities for working, costs of production, and a number of other points. The Geological Survey, under Dr. Rogers, would be called in to report on the extent of the deposit, its relation with other geological features of the locality, and such matters as the possibility of obtaining suitable limestone for fluxes, etc. At the same time, Mr. Fleischer, the Registrar for Mining Titles Department, would be consulted regarding the title under which the ground is held. The Mining Commissioner of the District would have to deal with any questions of discovery rights or proclamation which might be involved. The Labour Section of the Department would be called in to advise in regard to standard rates of wages in the neighbourhood and probable supplies of skilled and unskilled labour. Moreover, any question regarding priority for the importation of machinery or shipping space for export of products would be referred to our Import and Export Section." Concluding, Mr. Smyth said: "Whether the Department continues to be called 'the Department of Mines and Industries,' or whether, as has been suggested in the report of the Industries Advisory Board, it is called 'Industries and Commerce,' is a matter which must be left to the country to decide. The essential thing is not to split up the administration of the industries of the country."

# THE REPORT ON THE MEYER AND CHARLTON TRAGEDY.

## Findings and Recommendations.

THE report and findings of the Court of Inquiry into the accident at the Meyer and Charlton Mine, in which 21 white men lost their lives, were issued on Thursday by the Government Mining Engineer. The Court was constituted by Major N. F. Swinburne, Chief Inspector of Mines, Messrs. J. A. Vaughan, Chief Inspector of Machinery, Chas. J. Gray, Inspector of Mines, Johannesburg, and J. Denham, Inspector of Machinery, Johannesburg. It is the intention of the Government to give immediate effect to the recommendations of the Court. The findings were:—

(1) Isaac Johannes Badenhorst, Arthur John Blackwell, Stephen Bodfish, Harry Bower, Thomas Arthur Dakin, William Robert Edwards, William Geddes, James Hawthorn, William Jacobus Hulscher, Edwin (known as Ned) Johnson, Hendrick Johannes Koekemoer, Robert McGannon, Peter McCaffrey, David Wallace McCurdy, Thomas Norrish, Mico Pantovich, Sidney Renfree, Frank Roden, John Veldman, Frederick Vogwill, Conrad Petrus Webb, were killed about 7.10 a.m. on the 18th of July, 1918, at the Meyer and Charlton Mine, owing to the man trolley cage, in which they were being lowered, breaking away and crashing into the bottom of the shaft.

(2) That the breaking away of the man trolley cage was due to the snapping of the wire-rope sling by which it was attached below the skip.

(3) That the sling snapped owing to an abnormal strain being put upon it through the sudden application of the electric hoist brakes following the automatic opening of a circuit breaker, which was set too lightly to meet the ordinary contingencies of working.

(4) That the accident was not due to any act or omission of a criminal nature, or contravention of a statute or a statutory regulation.

### RECOMMENDATIONS.

As a result of consideration of the factors involved in the accident we recommend that:—

(1) A man trolley attached beneath another conveyance be not used except where it is impracticable to make other arrangements for lowering and raising the shift in reasonable time.

(2) Where a man trolley or cage is so used the connections have a calculated factor of safety with regard to the maximum static load of at least 50.

(3) Persons be not raised or lowered by a hoist working out of balance except with the written authority of the manager posted in the engine room and under the conditions stated in that authority.

(4) Where an ammeter is provided to guide the driver of an electric hoist fitted with an excess current circuit breaker device, the ammeter be tested against the circuit breaker by the mine engineer at intervals of not more than six months and the ammeter be marked to show a maximum which the hoist driver shall not permit the current to exceed. That maximum should not exceed half of the current which opens the circuit.

(5) Automatic action hoist brakes be so arranged that they will not interfere with the driver's braking control during the time lag in operation of the automatic brake.

The report details the conditions at the shaft at the time of the accident, and in the course of the narrative of the accident it is stated that the sling between the trolley and the skip broke owing to the severe surging stress upon it caused by the combined action of the speed attained by the conveyances, the sudden stop of the hoist drum due to the brakes and the spring of the long winding rope.

### CONTRIBUTORY FACTORS.

The Engine Driver's Action.—The theories that the circuit breaker may have been influenced apart from the driver's action by an earth tremor, change in current frequency or failure in wiring must be rejected as highly improbable. Experiments made after the accident showed that if the engine driver, when lowering unbalanced under regenerative control, moved his control lever slightly more rapidly or further than usual the circuit breaker was thrown out by the excessive current generated. The engine driver's evidence supported by the wattmeter chart shows that he was lowering under regenerative control at the time of the accident, and it is considered that the circuit breaker acted at that time for the same cause as in the experiments.

The driver was working under disabilities: his limit on the ammeter, according to his instructions was the 1,000 ampere mark, which in subsequent experiments was found to coincide approximately with the current which opened this circuit breaker, the ammeter being incorrect; his speed indicator also was out of adjustment. So far as is known the circuit breaker had opened with this driver only on the occasion of a skip derailment, but that his habitual care and skill in working the hoist accounted for freedom from such occurrences, is shown by the evidence that the circuit breaker always opened with new drivers and that the relieving driver employed about the time of the accident had it opened about five times in two weeks. At the time of the accident the driver may have misjudged the distance for stopping, his speed, or his load, and endeavoured to reduce too abruptly, but it appears clear that his hoist allowed no sufficient margin for the inevitable variations in human action, and that even if by manipulation of his lever he inadvertently caused the circuit breaker to open, he cannot be held blamable.

### THE CIRCUIT BREAKER.

The maker's peak load for the hoist is given as 1,300 amperes and when it was first erected, seven years ago, the circuit breaker was set for 1,500. The mine electrician shortly afterwards raised the setting to 1,700-1,750 amperes and it was not again altered prior to the accident. The driver was allowed to approach that amount though ostensibly limited to 1,000 as pointed out in paragraph 13. Expert evidence was given at the inquiry that there should be a large margin between the circuit breaker setting and the peak load and therefore the responsibility for permitting the hoist to be worked practically without margin must be considered.

When the circuit breaker was last set the margin of safety when lowering men was ample, but it has been reduced subsequently, first by the use in balance of man trolleys, then by the use out of balance of man trolleys conveying a few men, and finally by the use out of balance of man trolleys conveying a considerable number of men.

### THE PRACTICE IN LOWERING.

There is a conflict of evidence as to when the practice of lowering the trolley out of balance commenced, but clearly the final change took place in May last. If prior to then the man trolley was used at all for lowering below 18 it carried only 5 or 6 persons, while at the time of the accident owing to the practice of calling at intermediate stations having been adopted, 21 persons were in the trolley below 18. As the trolley below 18 is lowered out of the balance that means that the unbalanced load was increased by 15 persons, approximately 2,250 lbs. at least beyond what it was previously, and the virtual unbalanced static load allowing for the inclination and length of rope to 19 station by 1,021 lbs. to 10,579 lbs., or 9.55 per cent. The virtual unbalanced static load, i.e., the net load to be controlled by the hoist, at the time of the accident was greater than it would be at any point higher up the shaft while lowering men, in consequence of the change at 18 from balanced to unbalanced work. The development of regenerative current would also be greater, and probably greater than during any other operation of the hoist, as although a heavier load is controlled when lowering drills, they are lowered very slowly.

As, so far as known, the mine officials who made the changes in the lowering procedure, which constituted no unusual winding practice, had no reason to imagine that the hoist was so delicately adjusted that such changes might be risky, they cannot be blamed for failing to consult the engineering staff.

### ELECTRICIAN'S ERROR EXCUSABLE.

According to his evidence the electrician knew prior to the accident what was being done. Unfortunately, he did not protest or take any special precautions. Though after the event it can be seen that he was wrong, his error is considered excusable and one which does not indicate neglect or incompetence. Unless he thought deeply he would not realise that if the breaker did open when men were descending out of balance, an accident might occur, especially as it had several times opened harmlessly with upcoming loads.

The position appears to be that all reasonable precautions were taken to deal with upcoming loads, which were those giving the greatest pull on the hoist, but that the peculiar conditions with downgoing loads were not realised and specially provided for either by the consulting staff or the mine officials.

### BRAKES.

Before the accident the circuit-breaker never had opened while the load was descending, and evidently no one foresaw that it would do so and bring the automatic brakes into action, or realised that

if the effect of regenerative control were suddenly cut off the time lag of two seconds would permit a down-going conveyance to acquire considerable velocity before the brakes acted.

If the engine-driver had been prepared for those contingencies he would have used his pedal trip gear immediately the circuit-breaker opened, instead of first uselessly attempting to use his hand lever.

While time lag in the automatically applied brakes increases safety when they act during an upward journey, it is a danger when lowering or when approaching the extreme end of the shaft, unless the driver acts promptly. On the whole, we do not condemn the brake adjustments, for though, under the particular circumstances, the accident would not have occurred if the brake had acted without time lag, and in a manner allowing slight slip of the hoist drum, there are other more probable emergencies for which the existing arrangements would be preferable.

### TROLLEY CONNECTION.

Inspection of the broken sling, test of a duplicate from the other compartment trolley, and test of a sample of the coil from which both were cut indicate that the sling was in good condition and had an ample margin of safety under ordinary conditions of working. The duplicate sling showed a factor of safety of 25, and the coil sample of 26.5 under static conditions.

Consideration subsequent to the accident has shown that owing to the spring of a long winding rope a short connection between two heavy vehicles may be subjected to a snapping stress in excess even of the stress upon the winding rope itself, though the latter has to support both vehicles, and the sling one only. As, however, prior to the accident, engineering opinion would have accepted the sling which broke as suitable and adequate for its purpose, its use cannot be considered to show negligence.

### WINDING PERMIT.

The inquiry has drawn attention to the fact that the winding arrangements were being used to a depth not covered by the official permit, and that the skip in use was heavier than that employed at the time the permit was issued. As, however, the virtual load, owing to greater steepness near the surface, was larger in the portion of the shaft for which the permission was granted than lower down, and as the factor of safety even with the heavier skip was well above that required by the Mines and Works Regulations, an extended permit, if applied for, would certainly have been granted. The irregularity, therefore, has no bearing on the accident.

### CONCLUSION.

It will be seen from the foregoing analysis that several errors of judgment for each of which no one was seriously blamable, contributed to the disaster, but that the most important, and one without which the accident would not have occurred, was in the circuit-breaker setting.

# SOUTH AFRICAN POWER COMPANIES AND GERMAN MACHINERY.

## How the Largest Power Supply Concern in the Empire Came to Use Enemy Products—A Lesson for the British Manufacturer.

Mr. Bernard Price, the Chief Engineer to the Victoria Falls and Transvaal Power Co., recalled before the recent Congress of South African Manufacturers the history of the connection between that company and German electrical machinery, and the story cannot be repeated too often. Mr. Price said that the combined undertaking of the Victoria Falls and Transvaal Power Co., Ltd., and its subsidiary, the Rand Mines Power Supply Co., Ltd., constituted the largest concern supplying power in the British Empire, and he thought it would be of interest to the Congress to learn how it came about that so much of the plant installed by these power companies had been manufactured and supplied by enemy firms. In his opinion, the history of these power companies was one of the best object-lessons which could be cited in illustration of the methods by which Germany had developed her industrial power. When the Victoria Falls and Transvaal Power Co., Ltd., was promoted some twelve years ago, every effort was made to raise the initial capital in Britain, but the cautious methods of British banking houses prevented that course, and, in the end, the industrial banks of Germany took up the original debentures. Having established the business with this initial capital, all further money was raised in Britain, and the influence of the German banks was quickly terminated, but in the initial stages the two large electrical manufacturing firms in Germany, namely, the A.E.G. and Siemens Companies, through their close association with the banks, were enabled to obtain valuable contracts on lucrative terms. In the later stages of development the position was reversed, and the German manufacturers became confronted with keen competition. Important contracts had to be placed in 1912, when every effort was made to obtain the required plant from British firms, but it soon became apparent that the German manufacturers were prepared to reduce their prices to any extent necessary to retain the business connection. It was not a question of a few per cent., in fact the price was altogether a secondary consideration. These German firms had made up their minds to dump their products at very low prices rather than to lose the business. While it could not be said that the German plant had proved an unqualified success, there were no technical grounds for refusing to accept it, and no board of directors in those pre-war days would have felt justified in sacrificing the interests of their shareholders merely with the object of avoiding the purchase of foreign machinery. In course of time the same position would recur unless adequate steps were taken to prevent the dumping of enemy products in allied countries. Why, he asked, was it that Germany had been able to establish such a strong position in the industrial world? In the first place, it was due to the financial organization whereby her manufacturing concerns had obtained the liberal support and assistance of banking houses. Secondly, it was due to the amalgamation of manufacturers into a few powerful concerns, which, by reason of their enormous output of standardized articles, were enabled to reduce their cost of production to the lowest possible level. These huge corporations had acquired the financial control of many power supply undertakings, who were then forced to purchase their machinery from the controlling manufacturer at relatively high prices. In addition to this, the manufacturing firms had combined as members of a cartel for the purpose of maintaining prices to all customers in their own countries. The assured profits earned by those means had enabled the manufacturers to write down the capital value of their factories until their works stood at a nominal figure in the books. Under these circumstances, goods could be dumped in foreign countries at even less than cost price without ultimate loss, because the increased output thus secured cheapened production, and by taking such foreign business at low prices, an ever extending market for future output could be established. The experience of the power company confirmed the fact that, individually, the British engineer was more than a match for his German competitor, but Germany had scored by reason of her methods of organization and the kindly manner in which we had left her free to ramify her trade into every corner of the Empire. To succeed in the post-war campaign, we must beat Germany at her own game, and this could only be done by organizing production and distribution on a more efficient basis. To-day there were two enormous electrical manufacturing undertakings in Germany, and two in America, whereas in Britain there were numerous much smaller concerns. He believed that salvation lay in combination and co-operation between existing manufacturers, coupled with an efficient scheme of organization, not only of production, but also of distribution right down to the ultimate consumer in every market of the world.

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# THE YEAR WITH THE MINING MATERIAL TRADES.

## Annual Review by the Johannesburg Chamber of Commerce.

THE Commercial Year Book, just issued by the Johannesburg Chamber of Commerce, includes the annual report of the Chamber and the proceedings at the annual meeting, which embrace all the activities of the year 1917. In addition, the secretary has embodied all the statistical matter of interest in a convenient form of reference, which will enable the progress of trade and industry during the war period to be followed with intelligence. The chairmen of the different sections contribute brief reviews of the year 1917.

Mr. R. H. Philpot (mining material and machinery) writes that Home costs have been increasing month by month, and look like still going higher. Many merchants have obtained supplies from America, but manufacturers in that country are asking particularly high prices, which, added to the very excessive freight rates, makes costs almost prohibitive.

Mr. S. Hillman (timber and building material) states that the high cost of imported timber has had the effect of forcing people to look round for all sorts of substitutes, and a considerable quantity of S.A. timber has been put on the market. The scarcity of timber has demonstrated how essential it is for the future welfare of the country for the Government to devote more serious attention to the question of afforestation. Although building material has advanced so considerably in price, as well as wages for all skilled labour, the number of buildings that are being erected all over the Reef is surprising, and houses are more in demand than ever.

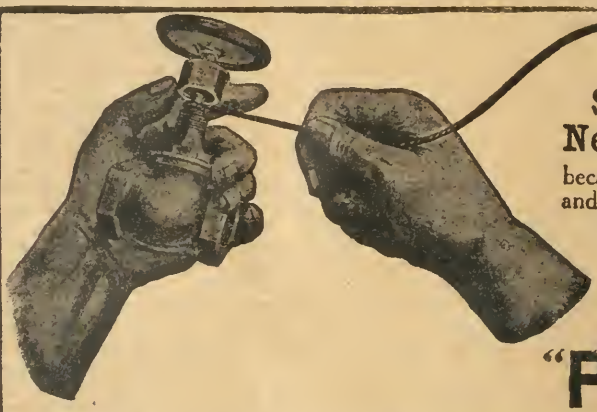
Mr. J. W. Kirkland (electrical trade) writes that increases in ruling prices as compared with pre-war prices may be stated as follows: Wires and cables, 80 per cent.; motors, 70 per cent.; switch gear, 60 per cent.; incandescent lamps, 70 per cent. Generally speaking, increases of prices during 1917 equalled the total increases which occurred between the outbreak of war and the end of 1916. Scarcity of plant has been responsible for a great deal of second-hand material coming into the market, and prices for this have ruled high.

Mr. A. N. Clogg (groceries and provisions, wholesale) states that owing to keen competition, wholesale merchants have been compelled to keep their prices as low as possible, and in the Transvaal the increase is not nearly so large as in other parts of the country, especially at the coast, and this notwithstanding the addition of railway rates.

Mr. R. V. Wells (groceries and provisions, retail) states that South African products during the year came in for a considerable amount of attention, and to-day the general public realise the fact that they have to purchase the products and manufactures of the country. In some instances the quality is of a high standard and equal to the imported article. From the retail point of view this is most gratifying. Unfortunately, the price in some cases is higher than the imported price was, and the public believe the retailer is profiteering, whereas the actual position shows a falling off in profit on returns. The demand to-day is in excess of production of many local manufactured goods.

Mr. J. Holdcroft (wholesale soft goods) foresaw great difficulties in catering for the Reef trade in 1918. Prices have risen enormously during the past five or six months. Then there will be the difficulties of manufacturing and shipping, so that goods coming forward at present advanced prices will be difficult to dispose of. The outlook for country business in 1918 is not very encouraging.

Mr. W. A. Doherty (produce) states that the crop of maize in 1917 was the biggest on record. Practically all the surplus maize was bought by the Imperial Government in the form of maize and meal. The Imperial Government bought f.o.b. South African ports and provided the necessary freight. Over four million bags have been shipped in this way since 1st July, 1917, to the end of April, 1918. The prices ruling for maize, March to June, 1917, were from 15s. to 16s. on rail, falling in July to 12s. 9d. yellow, 18s. 3d. hickories. Throughout most of the season exporters were paying higher prices than the Union Government, and nearly all the maize was shipped by exporters direct to the Imperial Government.

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# RAILWAY ELECTRIFICATION IN AMERICA AND EUROPE.—II.

## Lessons for South Africa—The Electrification of the Chicago, Milwaukee and St. Paul Railway.

The following is the continuation of Mr. A. E. du Pasquier's contribution to the discussion on Mr. J. W. Kirkland's paper on railway electrification, before the S.A.I. of E.E.:

I do not wish it to be assumed that, when I ask for details of the weight of this auxiliary equipment, I am disposed to criticise it from this point of view. To my way of thinking, additional weight of equipment has been made far too much of in the past, and in any case the weight per effective h.p., or percentage of total weight on driving wheels, or on whatever basis you like to put it, is so much more favourable in an electric locomotive that one can afford to add weight if operating advantage can be secured by so doing. At the same time, it must be remembered that regenerative control can be obtained with three-phase motors without any additional complication, and very often at an appreciably greater efficiency; for example, the reported return of energy on the Giovi line is 60 per cent. of the energy used by the same train on the up grade. Such a return is only possible with gearless three-phase motors operating through static transformers, and while I note that the author claims a 60 per cent. return to the line on a 2 per cent. down grade, I venture to think the figure is overestimated. An example will make clear that there is not much margin round about 60 per cent. A 2 per cent. grade will mean 40 lbs. per ton due to the grade, up or down; we also have, say, 10 lbs. per ton friction, so that the power required is of the order of 50, and the power supplied 30, or 60 per cent. without taking into account gear losses or motor efficiencies, to say nothing of motor converters in the sub-stations, and line losses.* The value of regenerative braking, however, is in the writer's opinion not to be measured by the reduced units per ton mile, although of course a saving of 10 per cent. to 15 per cent. to 20 per cent. in power requirements is very desirable, the chief advantage lying in the immense saving in wear and tear on brake shoes, tyres, brake rigging, track, draft gear, and so on, with all the labour and time involved, and the far greater safety in operation resulting. There is the further advantage that, with any reasonable service, the regenerated energy largely eases the peak demand on the sub-station or source of local supply, such smoothing out of the load also of course very beneficially affecting the load factor. While on this point, I may remark in passing that I do not agree with the author's figure on page 169 for a 2,500 ton train descending a 2 per cent. grade; I think it should be 2,500 k.w., not 3,500 k.w. It has been pointed out by some writers that regenerative braking must tend to increase the size of the equipment otherwise necessary. It does very materially add to the R.M.S. value of the heating cycle, and while not of necessity increasing the actual load on the motor equipment at any instant beyond the normal one hour capacity of the equipment selected, it might from a heating point of view in former days have necessitated larger motors. With modern equipments, however, and forced ventilated motors, the continuous rating is so close to the one hour rating that this contingency no longer arises. In the present case, as the author points out, the continuous rating is as high as 87½ per cent. of the one hour rating, and this is now general practice. For example, in the New York, New Haven and Hartford locomotives, this figure varies from 83 to 89 per cent., the corresponding figure for the Norfolk and Western locomotives being 80 per cent. I should be obliged to the author if, in his reply, he could give us details of the profile between Harlowton and Three Forks, lengths and grades; one could then account for the seeming anomaly mentioned by Professor Buchanan of a difference of 40 per cent. in watthours per ton mile between two points of approximately the same elevation for trains going east and west. It is no doubt accounted for partly by considerations of virtual profile, and partly by heavier input losses on the more unfavourable grades, but it would be instructive to have further data. Generally, I think this very interesting paper could have been made still more interesting to railway men if we had been given fuller particulars of the actual train operations. As far as I can see, all the data we have on the more important freight traffic is that six to eight trains, of a maximum of 3,000 gross tons, are moving daily in each direction, and further, that the locomotives are designed to haul a 2,500 ton trailing load singly on a 1 per cent. grade at 16 miles per hour, and a 3,000 ton train requires two locomotives on down grades of 2 per cent. at rather lower speeds, which is rather meagre information for hungry men. I take it, this reference to 3,000 tons is also trailing, otherwise it represents with two locomotives the same 2,500 ton trailing load. In this respect it would seem to compare unfavourably with the Norfolk and Western electrification, where one 270 ton locomotive will take a full tonnage train of 3,250 tons down the 2·36 per cent. grade at about 15 miles per hour. On page 168 the author gives an extremely interesting figure for the average cost of power per thousand ton miles of freight traffic, namely, 20·5 cents, or adding the cost of sub-station operation, 23·5 cents. The average watthours per ton mile is given at 32·9, which will probably apply very accurately to the whole length of the electrified section, an average figure for level track and heavy freight operation being, say, 30 watthours per ton mile. With the conversion and distributing losses bringing this figure to 49·2 watthours per ton mile, we arrive at a cost for power of 0·42 cents, or, say, 0·21d. per unit. As the load factor for the month of August works out at 40 per cent. (not, I think, 48 as mentioned, assuming the figures for maximum demand and total units consumed as a base), the charge would seem a very reasonable one, as with this load factor one might have expected the generating costs to have been as high as 0·41d. per unit. At 60 per cent. load factor the generating costs will probably have not been lower than 0·225d., so there is no getting away from the fact that the Railway Co. have made an excellent bargain with the Montana Power Co. There is, however, so much margin in favour of the cost for power on such lines, as against the cost for coal, that whether the price charged be ¾d. or ½d. per unit is really not an influencing factor, as the following figures will show:—

| Railroad. | Kind of Service. | Coal per 1,000 ton miles. lbs. | Tons of Train. | Cost of Coal. d. |
|---|---|---|---|---|
| Norfolk & Western... | Mountain freight | 585 | 486 | 37·6 |
| Great Northern ..... | Mountain freight (consolidations) | 380 | 1,050 | 24·40 |
| Great Northern ..... | Mountain freight (Mallets) ... ... | 890 | 810 | 57·25 |

The figures in the last column are based on coal costing 12s. a ton in the tender. It is very doubtful if coal of sufficiently good quality could be obtained for 12s. per ton in the tender. On steam locomotives of this kind, pushed to the limit, with coal consumption at the rate of from 100 to 200 lbs. per square foot of grate area per hour, it is probably not worth burning anything under about 11,000 to 12,000 B.T.U. fuel, and when all the hauling, storing and handling charges are added, 12s. per ton will be a very conservative figure indeed. As a matter of fact, I have recently come across figures confirming a cost, delivered in the tender, of 4 dollars 20 cents, or 17s. 6d. per ton for the Northern American roads, which would increase the figures given in the last column by 46 per cent., or nearly half as much again. Such figures should be compared with Mr. Kirkland's figure of 23·5 cents, or rather less than 1s.

*(To be continued.)*

* Mr. F. Lydall has subsequently pointed out that curves are usually inevitable where such extreme grades exist, which would still further reduce the theoretically possible return owing to the added rolling friction.

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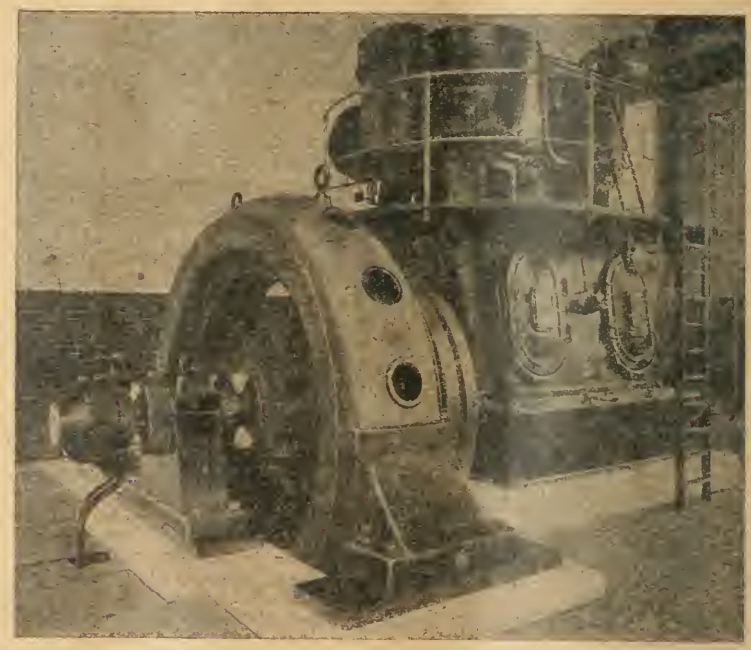

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# THE WEEK IN THE SHAREMARKET.

## A Speciality Market—Big Spurt—Modder East—African Farms.

At the opening on Saturday attention was at last once more turned on the long neglected Modder Easts. The price overnight was 17s. 9d.—18s., and the first sale in the morning brought them to 18s. 6d. and subsequently 18s. 9d. Springs, which were heavily sold on the previous day, came weaker. A deal in Premier Deferred was put through at £7 10s. At the call Modder East and the options made a further advance. Modder B. and New Modder were also strong. Small sympathetic advances were recorded in Rand Klip and Cloverfields owing to the improvement in Modder East. Kleinfonteins, which had been looking up during the past week had a setback. After the call there was another run on Modder East and by eleven o'clock the price had risen to 19s. 9d., four-year Options to 7s. 5d., and three-year Options to 5s. 3d. The high water mark in the course of the morning was reached at 20s. 9d., with the Options at 5s. 6d. and 7s. 6d., from which the price receded to 20s. 3d. buyers. It is reported that satisfactory developments have taken place on the eastern side of the property, which statement, if correct, ought to ensure the position of the mine. There was a noisy opening on Monday, induced by active dealings in Modder East. Starting at 21s. they were carried to 21s. 9d., receding to 21s. The three-year Options were dealt in at 6s. 3d. and 6s. 1d., and the four-year Options at 8s. and 7s. 10d. A thirty-day call was bought at 1s. on 21s. 6d. So far it has been impossible to obtain any definite information regarding the reported strike. After this stock had had its run, Leeuwpoorts had a turn, reaching 40s., with African Farms at about 15s. Business was active at the call, an unusual number of sales being put through at generally improved prices, with the exception of Kleinfonteins. Both the chief gambling counters died away during the day—Leeuwpoorts falling to 38s. 6d. and Modder East to 20s. 9d. Tuesday's opening was quiet with no improvement in prices. The call was dull; business fell off considerably and dealings were generally at a lower level, with the two exceptions of Pretoria Cements and Hume Pipes. On Wednesday morning Modder East were absolutely neglected and African Farms took their place. Closing overnight at about 15s., they opened at 16s., and through no less than 19 recorded transactions they fluctuated from that price to 15s. 10d. and 16s. 4d. Thousands of shares changed hands, but not a soul seems to know the reason. Anyway, it had nothing to do with Leeuwpoorts, for they were unchanged. At the call all prices were firm and the general market broadened. The one exception was Sub Nigel, which weakened appreciably. So far as can be gathered, the movement in African Farms is partly owing to the idea that land values have appreciated, and this is borne out by the improvement in S.A. Lands. The market closed strong, with sales of Africans at 17s. 7d. and 17s. 6d.; S.A. Lands, 7s. 1d.; Modder Easts, 21s.; three-year Options, 6s.; and four-year Options, 7s. 8d. At the opening on Thursday Africans came back to 17s. 4d., while S.A. Lands advanced to 7s. 5d. The call was not quite so active, notably in the Modderfontein group, in which no business was done in the three heavy stocks. Kleinfonteins had another substantial rise after their recent setback, and a good many of the smaller stocks were in demand at improved rates. Four new companies were listed. South African Alkalis; Sub Nigel, 5s. paid; Southern Van Ryn, and their Options. The outside business for the week consisted of:—Sales: Southern Van Ryns, 13s. 9d. to 14s. 6d.; Alkalis, 45s. to 47s. 6d.; West Springs, 22s. 3d. to 22s. 9d., Options 8s.; Monteleos, 31s. 6d. to 32s. 6d.; New Farms, 2s. 3d.; Mauss Syndicate, 30s.; Sub Nigel 5s. paid, 11s. 3d.; Phoenix, 11d.; Sikalavas, 4s. and 10s.; Makganyne Diamonds, 20s. for odd lots. Sellers: Phoenix, 1s.

There was very little doing at the opening on Friday. At the call tin stocks went better, also Government Areas. The following changes of quotations are noted:—Sales: African Farms, 17s. 2d.; Main Reef, 12s. 9d.; Crown Diamonds, 3s. 9d.; Consolidated Langlaagte, 20s. 6d.; East Rand Coals, 2s. 5d.; East Rand Deeps, 11d.; Government Areas, 85s. 9d. and 85s. 6d.; Hume Pipes, 33s. 6d.; Jupiters, 4s. 6d.; Knight Centrals, 4s. 6d. and 4s. 3d.; Leeuwpoorts, 39s. 6d.; New Modders, £25 17s. 6d. for odd lots; Kleinfonteins, 14s. 9d. and 15s.; New States, 22s. 6d.; Princess, 3s. 7d.; Rooibergs, 12s. 4d. and 12s. 3d.; South Van Ryns, 15s.; Options, 1s. 9d.; Simmer Deeps, 1s. 9d.; Sub Nigels (5s. paid), 11s. 9d. and 11s. 10½d. Buyers and sellers: Dagga Options, 5s. seller; Heriots, 15s. seller; Alkali, 40s. buyer; Consolidated Lands, 21s. buyer; Wolhuter, 3s. 9d.—4s.; Wit. Deeps, 8s. 9d.—9s.; Zaaiplaats, 18s. 9d.—19s.

| | Fri., 23rd | Sat., 24th | Mon., 26th | Tues., 27th | Wed., 28th | Thurs., 29th |
|---|---|---|---|---|---|---|
| African Farms | 14 3 | 14 3 | 15 0 | 14 3* | 16 3 | 16 11 |
| Anglo-Amer. Corp | 33 0* | 32 0* | 33 0 | 33 0* | 33 0* | 33 0 |
| Apex Mines | 7 0 | 6 10* | 6 9* | 6 11 | — | 6 9* |
| Bantjes Cons. | 3 3 | 3 1* | 3 4 | 3 3 | 3 5 | 3 5 |
| Breyten Colls. | 11 0* | 10 0* | 11 0* | 11 0* | 11 0* | 11 0* |
| Brakpan Mines | 78 0† | 78 0† | 74 0* | 77 6* | 77 6* | 78 0 |
| Cassel Coals | 30 0† | 30 0† | 30 0† | 30 0† | — | 30 0† |
| City and Subs. | 8 6 | 8 3* | 8 3* | 8 3* | 8 0* | 8 6† |
| City Deeps | 51 9* | 51 6 | 51 6* | 52 0 | 52 0* | 51 3* |
| Cloverfield Mines | 7 6* | 8 0* | 8 6* | 8 0* | 8 6* | 8 6* |
| Clydesdale Colls. | 16 6* | 15 6* | 15 6* | 16 6* | 16 6* | 16 6* |
| Con. Investments | 19 0* | — | — | 19 0* | — | 19 0* |
| Con. Langlaagtes | 17 6* | 17 9* | 18 6* | 18 6* | 20 0* | 24 0* |
| Con. Main Reefs | 12 3† | 12 0* | 12 6 | 12 3* | 13 0* | 13 0† |
| Con. Mines Sel. | 26 0 | 25 0* | 25 6* | 25 6* | 25 0* | 25 6* |
| Coronation Prees. | 1 2* | 1 0* | 1 1* | 1 2* | 1 2 | 1 5 |
| Daggafontein Mines | 23 0 | 23 6* | 25 9 | 23 3* | 24 6† | 23 0* |
| Do. Options | 5 0† | 4 9 | 5 6 | 5 0* | 5 0* | 5 1* |
| Durban-Rood. | 10 0* | 10 0* | 10 0* | 10 0* | — | 10 0* |
| Durban-Rood. Dp. | 9 0† | — | — | 7 0* | 7 0* | — |
| East Rand Coals | 2 3 | 2 2* | 2 2 | 2 2 | 2 2* | 2 2* |
| East Rand Deeps | 0 9* | 0 9* | 0 10* | 0 11* | 0 11* | 0 11* |
| E.R. Minings | 16 0* | 17 0 | 17 0* | 17 6 | 17 6* | 17 9* |
| East Rand Props. | 5 0 | 5 1* | 5 3 | 5 1* | 5 0 | 4 9 |
| East Rand Debs. | — | £60* | £60* | £60* | £60* | £60* |
| Eastern Golds | 1 3* | 1 4* | — | 1 3* | 1 4* | 1 3* |
| Frank Smith Dias. | 2 11* | 3 0* | 2 10* | 2 10* | 3 0* | 3 0* |
| Geduld Props. | 39 0 | 38 6 | 38 0* | 38 0* | 38 0* | 38 9* |
| Glynn's Lydenburgs | 20 3* | 21 0* | — | 21 9* | 22 6* | 23 6 |
| Govt. Areas | 82 3 | 83 6 | 84 0 | 83 0 | 83 9 | 84 0 |
| Jhb. Bd. of Ex. | 26 0* | 26 0* | 26 0* | 26 0* | 26 0* | 26 0* |
| Jupiters | 3 6* | 3 6* | 3 9* | 3 9* | 3 9* | 4 3 |
| Klerksdorp Props. | — | 2 9* | 2 9* | 2 9* | 2 9* | 2 9* |
| Knight Centrals | 4 0 | 3 9* | 4 0 | 4 0 | 4 1 | 5 1 |
| Lace Props. | 11 9* | 12 0 | 12 3* | 12 3 | 12 4 | 12 6 |
| Leeuwpoort Tins | 37 0 | 37 3 | — | 38 3 | 39 3 | 38 9* |
| Lydenburg Farms | 9 10 | 9 8 | 9 8* | 9 8 | 9 9 | 9 11 |
| Main Reef Wests | 2 6* | 2 5* | 2 6* | 2 6* | 2 9* | 2 9* |
| Middelvlei Est. | — | 1 0* | 1 0* | 1 0* | 1 0* | 1 0* |
| Modder B.'s | 158 0 | 160 0* | 162 6 | 160 0* | 161 6 | 159 0* |
| Modder Deeps | 145 0 | 144 6 | 145 0A | 144 0* | 145 0 | 143 0* |
| Modder Easts | 18 0 | 19 3 | 21 4½ | 20 7½ | 20 7½ | 21 0 |
| Do. Options (3yrs.) | 4 11* | 5 1 | 6 1 | 5 7* | 5 7* | 5 11 |
| Do. Options (4yrs.) | 6 11 | 7 3 | 7 11 | 7 7* | 7 8 | 7 9* |
| Hume Pipes | 32 6* | 33 0 | 33 6 | 36 0 | 36 0 | 33 0* |
| Natal Navigat. Coll. | 18 9* | 18 9* | 18 9* | 18 9* | 18 9* | 18 9* |
| New Eland Dias. | 25 0* | 25 0* | 25 0* | 25 0* | 25 0* | 24 0* |
| New Era Cons. | 10 1* | 10 1* | 10 3* | 10 4* | 10 4 | 10 4* |
| New Geduld Deeps | 5 9 | 5 9* | 5 9* | 5 9* | 5 9* | 5 9* |
| New Kleinfonteins | 15 9 | 14 9 | 14 0 | 14 0 | 13 6 | 15 6 |
| New Modders | £25⅝* | £25⅞* | £25⅞* | £25⅞* | — | — |
| Nigels | 4 9* | 4 9* | 4 9* | — | 4 6* | 4 9* |
| Nourse Mines | 17 0† | 17 0† | 15 9* | 15 6* | 16 0* | 17 0* |
| Premier Prefs. | 150 0* | 145 0* | 145 0* | 145 0* | — | 145 0* |
| Pretoria Cements | 120 0* | 125 0 | — | 129 0 | 129 0 | — |
| Princess Estates | — | 3 8 | 3 10 | 3 10 | 3 9 | 3 6* |
| Rand Collieries | — | 2 9* | — | 3 2* | 4 0 | 4 0* |
| Rand Klips | 8 0* | 8 6* | 9 3 | 9 6* | 9 6 | 9 6* |
| Rand Nucleus | 1 3* | 1 3* | 1 3* | 1 3* | 1 3 | 1 5 |
| Rand Select. Corp. | — | 87 0* | 88 9 | 90 0† | 88 0* | 89 0* |
| Randfontein Deeps | — | 3 10* | 4 0 | 4 2 | 4 1* | 4 2* |
| Randfontein Est. | — | 14 0* | 14 0* | 13 6* | 13 9 | 14 0 |
| Roberts Victors | 6 0* | 6 0* | 6 0* | 6 0* | 6 0* | 6 0* |
| Rooibergs | 12 6* | 12 6 | 12 4 | 12 0* | 11 9 | 11 6* |
| S.A. Breweries | 26 0* | 26 0* | — | 26 0* | 26 0* | 27 0 |
| S.A. Lands | 6 2 | 6 4 | 6 5 | 6 5 | 6 10 | 7 4 |
| Springs Mines | 69 6 | 68 9* | 69 9 | 69 9 | 69 3* | 69 6 |
| Sub Nigels | 28 0 | 28 1½ | 28 3 | 28 0 | 27 6 | — |
| Swaziland Tins | 31 0* | 31 0* | 31 0* | 31 9* | — | 31 6* |
| Transvaal Lands | — | 20 0† | 20 0 | 20 0* | 21 0 | — |
| Transvaal G.M. Est. | 15 6* | 17 0† | 15 0* | 15 0* | 15 6 | 16 0† |
| Van Ryn Deeps | 70 3 | 70 0 | 70 6 | 70 0 | 71 6 | — |
| Village Deeps | 15 6* | 15 0* | 15 6* | 15 9* | 15 9 | 16 0* |
| Welgedachts | 25 0* | 25 0* | 25 0* | 25 0* | 25 0* | 25 0* |
| Witwatersrands | 22 0† | — | — | 22 6† | — | — |
| Wit. Deeps | 9 0† | 9 0† | 8 6 | 9 0† | 8 9† | 8 6* |
| Wolhuters | — | 4 0 | — | — | 4 0* | 4 0* |
| Zaaiplaats Tins | 18 4 | 18 5 | 18 6 | 18 2 | 18 3 | 18 5 |
| New State Areas | 19 0* | 19 3* | 20 3 | 20 7½ | 20 6 | 20 0A |

*Buyers. †Sellers. AOdd lots. BEx London.

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Stands for absolutely the BEST in a Pipe Wrench; *Strength, Durability,* and all the qualities necessary in a tool of this kind to stand up under hard usage.

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# THE WEEK IN THE MINING MATERIAL AND ENGINEERING TRADES.

## Peace Prospects and the Importers—American Trade and Shipping—Oils, Paraffin and Petrol—A Factory Stopped—Bricks and Cement—Iron, Steel and Pig Iron—Trend of Business.

THE excellent news from France permeated the Stock Exchange some time ago, and now it has begun to affect the ideas of the Commercial Exchange. Take, for instance, the timber question, an importer is due to order more timber from Sweden, but he is holding off for the moment. His sequences of orders are coming along much as usual, but obviously at high values, and it is these high values that make him pause as to the future. Anything contracted for now means about eight months to be delivered in Johannesburg, when it is very problematical as to the happenings, as the opinion is pretty unanimous that peace will come along at least in 1919. Remember a year ahead is not a great while for importers to arrange their indents and contracts. When peace does come the commercial arrangements between Britain and Sweden will soon be resumed, whereby Britain, in exchange for its coal, will obtain timber and thus pretty well balance the financial ledger, when the English pound sterling will return to about its normal value as regards the financial exchange between London and Sweden; whereas to-day under the abnormal war conditions it only represents about 14s. This in itself will drop the price of deals anything by 6d. per foot, making our selling price decline from about 2s. to 1s. 6d. Undoubtedly these considerations are being carefully weighed in commercial circles to-day.

### AMERICAN TRADE AND SHIPPING.

It is difficult to ascertain anything about American shipping. What can be said, however, is that South Africa is not altogether neglected, as ships keep arriving here; many without any general notice until they are safely anchored in Table Bay docks. American importers state that quotations are still available for iron, steel and various mining materials, but not a word is said about when anything can be shipped. There is any quantity of material awaiting in America and Canada for shipment to South Africa and according to the best information, no stone is being left unturned to make a dead set on our markets after the war. It can also be stated that present quotations are not more than those prevailing during the past month.

### OILS, PAINTS, PARAFFIN, PETROL.

Linseed oil seems rather plentiful, as supplies have been received at Capetown. It is offered from there at 16s. 6d. I.G. on rail, carriage forward to Johannesburg. White lead is also more plentiful at the coast at 1s. 3d. lb. f.o.r., which is about 1s. 4½d. Johannesburg. Turps, benzine, petrol and paraffin are in the acute stage of shortage. Turps can only be had in bottles at 2s. each. Benzine cannot be had at any price in case lots. Petrol and paraffin are under Government control, which may not assist matters much,


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but through the permits it will provide a fairer means of distribution. A few tins of paraffin have been bought at various country stores at 17s. 6d. At one place when a second tin was asked for, the reply was " No, but if you want another you will have to pay 20s., as we do not want to sell anybody more than one tin." Linseed oil putty has advanced from 9½d. to 1s. lb. The glass position has not altered from last week, excepting a little more stringent, as no new supplies have arrived. The ordinary window glass is getting as acutely scarce as the plate glass, and orders are only booked to arrive, without any promise as to when that is likely. A factory for making polishes, blacking and dubbin has closed down in Johannesburg, locking up about £15,000 stores, for the lack of turpentine and paraffin.

### Bricks, Cement and Lime.

Bricks are in fair demand, but wire cuts and press bricks are practically unobtainable. Machine bricks are now coming in from outside districts to supplement the Johannesburg supplies, which are insufficient because buildings in the city require the better class of bricks for three and four-storied erections, and such are usually specified by the architects. Cement is practically unobtainable through merchants; when perchance a few bags can be obtained " round the corner," as much as 17s. 6d. has been paid and offered. Quite a number of jobs are hung up for the want of cement.

### Iron, Steel and Pig Iron.

A Transvaal foundry has been endeavouring this week to place an order in Britain, through a Johannesburg house for pig iron. This is urgently required for special moulding work on hand. Locally made dog spikes, 3 in. x ⅜ in., have been offered at 2s. lb., as against the imported at 1s. 3d. lb., but the smaller sizes cannot be had. There is an acute scarcity of wire nails in the smaller sizes under 3 in., of which there are none on offer from the ordinary distributing houses. When perchance any are to be had the price is anything from 130s. to 150s. per 100 lbs. The only relief seems in Canadian shipments that are problematical at the moment. Shovels are very scarce indeed, being from 105s. to 115s. per dozen, as compared with about 2s. 3d. each before the war. Business is quite good for all kinds of imported iron bars as enquiries range from Delagoa Bay, Port Elizabeth, Durban, O.F.S., and various parts of Rhodesia.

### The Trend of Business.

People are " Micawber " like, waiting for something to turn up. Business has been almost at a standstill on the Commercial Exchange, but a turn is expected, when the September month opens. If the British Government, according to Reuter, assists the poorer grade mines by purchasing the output, much good result is expected for the mining material community. All the foundries and engineering shops are working full time, and more very often. They keep busy, chiefly from mine work, not only for the Witwatersrand but for Southern Rhodesia and the Northern Transvaal.

### Revised Price List.

Building Materials.—Timber: Deals, Baltic, 9 x 3, 2s. to 2s. 1d.; flooring, 4½ x ⅞ and 6 x ⅞, 11d. to 11½d. per sq. ft.; ceilings, 6 x ½, 7d. to 7½ l. per sq. ft.; pitch pine, 9s. 6d. per cub. ft.; Oregon, 9s. to 9s. 6d. per cub. ft.; clear pine, ¼in. x 12in., 1s. 6d. per foot; 1in. x 12in., 1s. 11d.; teak, 25s. to 26s. per cubic foot; shelving 1s. 3d. Jarrah, 13s. 6d. c. ft.; poplar, 1in. x 12in., 1s. 7½d.; scantling, 2s. to 2s. 1d. ft.; beaver boards, 9d.; galvanised iron, 24 gauge, 6ft. to 10ft., 2s. 2d. to 2s. 3d.; 11ft., 2s. 3d.; 12ft., 2s. 3½d.; 26-gauge, 6ft. to 8ft., 1s. 10d.; 9ft. and 10ft., 1s. 11d.; flat galvanised, 24 and 26-gauge, 110s. 100lb.; floor brads, 90s.; ceiling, 75s.; wire nails, 75s. to


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120s. 100lb.; locks, rim, 72s.; mortice, 80s. per doz.; steel ceilings, 80s. to 85s.; roofing material, 1 ply, 45s.; 2 ply, 52s. 6d.; and 3 ply, 57s. 6d. per roll.

BRICKS, CEMENT, LIME, ETC.—Pretoria Portland Cement, 9s. 3d bag; 8s. 3d. truck loads; lime, white, unslaked, 7s. 6d.; truck loads, 6s. 6d.; slaked, do., 5s. 6d.; blue, 4s. 6d.; plaster lime, 5s. 6d.; bricks, stock, delivered, 65s. to 70s.; wire cuts, 70s. to 80s.; pressed, 70s. to 80s. 1,000; road transport expensive when obtainable; salt glazed, £17 17s., and white glazed bricks, £35 per 1,000; roofing tiles, £17 10s. to £27 10s. per 1,000; glazed tiles, 17s. 6d. to 27s. 6d. yard; paving cement tiles, 8s. 6d. per yard laid; reinforced concrete columns, 6ft. plain, 25s.; fluted, 30s.; fireclay bricks, £8 10s. to £10 10s. at kiln, per 1,000; clay chimney pots, 45s. to 80s., according to height (12in. to 18in.) per dozen.

OILS, PAINTS, LEAD, OXIDE, GLASS.—Linseed, raw and boiled 14s. to 15s. O.M. gallon; white lead, 1s. 6d. per lb. and 1s. 3d. in big lots; turpentine, 110s. 2/4 1-5 galls.; 10—1's; 5-6 imp. tins, 120s.; oxide in oil, 60s. per 100 lb.; dry oxide, 13s. 6d. to 16s.; linseed oil putty, 1s. per lb.; paints in tins, 1s. 6d. per lb.; British plateglass, ¼in., 8s.; do., mirror, 8s. 6d.; window, 16oz., 1s. 6d. to 1s. 9d. per foot; and fancy glass, 2s. per foot.

GREASE.—Imported, A.F. axle, £37½ local, £31 to £31½ per ton; tallow (local), 8½d. per lb.; paraffin quotations unobtainable; petrol, 37s. 6d. to 38s. 2/4 I.M.P.; motor oil, 7s. to 8s. 6d. per gallon; engine lubricating oils, 37s. 6d. to 42s. 6d. per case; cylinder, 37s. 6d. to 42s. 6d.

CHEMICALS.—Mercury, £40 75lb.; bichromate potash, 5s. 6d. lb; chlorate, 4s. 6d. lb.; permanganate, 18s. to 18s. 6d. lb.; alum, 7d. lb.; carbolic acid, 5s. 6d. 1lb.; borax, 120s. 100lb.; cyanide sodium, 2s. 3d. to 2s. 6d. lb.; hypo, 1s. lb.; nitrate lead, local, £55 10s. ton; litharge (assay), 70s. to 72s. 6d. (commercial), 58s. 6d. 100 lbs.; zinc sheets and blocks, 1s. 9d. lb.; locally-smelted zinc, 6½d. lb.; plumbago crucibles, 6½d. per number; carbide, 100s. to 110s. 100 lb.

ELECTRICAL GOODS.—Lamps, high voltage, British, Holland and American, 33s. to 36s. wholesale, and 48s. to 54s. doz. retail; carbon lamps, 20s. dozen; pure rubber flex, 6d. to 8d. yd.; 3/20 coils wire, 60s. to 65s.; ditto, 3/22, 45s. to 50s.; 7/22, 75s. to 80s.; 7/20, 130s. 7/18, 170s.; tubing, 40s. to 45s. per 100ft.; keyholders, 4s. 6d. to 5s. each; round blocks, 3½in., 5s. to 5s. 6d. dozen; lamp holder cord grips, 15s. to 15s. 6d. per dozen; switches, 5 amp., 36s. to 37s. 6d. per dozen; British glass shades, 30s. to 40s. dozen; porcelain shackles, 15s. to 18s. dozen; do., bobbins, 25s. to 30s. per 100; cleats, 22s. per 100; P.O. insulators, 18s. dozen.

IRON AND STEEL.—Imported, ¼in. and 3-16in. round iron, 95s. to 100s.; ⅜in. do., 85s.; ⅜in. steel, round, 80s.; ½in. round iron, 75s.; do. steel, 72s. 6d.; ⅝in. round iron, 72s. 6d.; do. steel, practically none in town; ⅜in. round iron, 65s. to 67s. 6d.; ⅜in. steel, 62s. 6d. to 65s. Imported flat iron, various sizes, 50s. to 70s.; all at per 100lbs. Dunswart local iron has advanced and is now sold by storekeepers at 45s. per 100lbs. Vereeniging mild steel also 45s. per 100lb. Steel-plates, 85s. to 95s., many sizes unobtainable. Hexagon and cuphead bolts, ¼in. diameter, 2s. to 2s. 6d. per lb.; 5-16in. diameter, 1s. 9d. to 2s. per lb.; ⅜in. diameter up to 3in. long, 1s. 9d. lb.; ⅜in. dia., 1s. 6d.. 3½in. and up long 1s. 6d. lb.; ½in dia. up to 2½in long, 77s. 6d. 100lb; ½in dia. and 2½in up long, 75s. per 100lb.; ⅝in. diameter up to 2½in. long, 85s. per 100lb.; ⅝in. dia. 2½in. and up long, 60s. per 100lb.; ¾in. diameter, 2½in. and up long, 55s. 100 lb.; ¾in. and 1in. diameter, same price as ⅝in. diameter; nuts, ⅜in., 1s. 5d. per lb.; ½in., 85s.; ⅝in. 95s.; 1⅛in. and 1¼in., 85s.; 1⅜in. to 1⅝in., 87s 6d.; 2in. up, 92s. 6d.; washers, all 45s.; rivets, 3-16in., 1s. 6d. lb.; ¼in., 5-16in., 1s. 6d. lb.; 7-16in., ⅜in., 1s. 3d. lb.; ½in., 75s. to 80s.; ⅝in., 72s. 6d.; ¾in. up, 60s. 100 lb.; shoes and die, 32s. 6d. to 35s., 100 lb.; rails, £25 per ton; picks, 4lb., 40s. dozen; shovels, 80s. to 90s. dozen; drill hammers, 5½d. to 6d. per lb.; hammer handles (best American), 14in., 4s. 6d.; 24in., 10s.; 30in., 14s.; 36in., 17s 6d. per dozen; metal, anti-friction knoxite, 11d. to 4s. and special prices per lb.


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In consequence of the daily, and even hourly, variation in prices, the Editor will answer reply-paid telegrams to verify any quotation in our list.

## CORRESPONDENCE AND DISCUSSION.

### Nitrate of Lead.

To the Editor, *S.A. Mining Journal and Engineering Record.*

Sir,—We notice that you are still quoting the price of nitrate of lead as 51s. per 100 lbs. in your esteemed publication, and would draw your attention to the fact that this was increased to £55 10s. per ton on the 1st instant, as per circular attached hereto.—Yours, etc.,

The British South African Explosives Co., Ltd.,
JOHN HUNGERFORD,
Acting Local Secretary.

Government Square, Johannesburg,
24th August, 1918.

The enclosure is as follows:—

*Nitrate of Lead.*—We beg to advise that our price for this chemical now is: £55 10s., less 5 per cent., per ton of 2,000 lbs., delivered to the mines on the Witwatersrand.

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# Engineering Notes and News.

## THE MAUSS HYDRO-EXTRACTOR.

A DEMONSTRATION will be given next week of the new continuous running intermittent charging and discharging hydro-extractor, recently patented by Mr. W. Mauss. This machine consists of a centrifugal separation drum formed by two perforated cones which are held together by a

THE NEW MAUSS MACHINE.

hydraulic piston moving a toggle in such a way that when the drum is closed the toggle arms are in a straight line perpendicular to the plane of the drum. The toggle being in this neutral position the tendency of the drum contents to force the cones apart is effectively resisted. When the liquid contents have been discharged through the perforations of the drum, the drum is lowered, still spinning, in its closed position until it is on a level with a different receptacle than that which receives the liquid. Then the hydraulic piston by means of a lever forces the toggle arms outwards and opens the drum, the two cones continuing to spin when separated, and the solid contents under the high centrifugal force are instantly discharged. The hydraulic piston then reverses its action, closes the drum, and lifts it into its former position to receive the new charge. Several of these machines are now running and abstracting crystals from the mother liquor, giving great satisfaction. Their power consumption is very low, each machine delivering up to 7 tons of crystals in 24 hours—according to the nature of the material—using about 2 h.p. Quite a number are now under construction to order. The machines are very rigid, and run in ball-races throughout. They can thus be built for any desired speed and designed for any purpose for which centrifugal separators and hydro-extractors are used; and will replace those at present in use, as they can be run at much higher speeds and without the loss of capacity and power and undue wear and tear of the bearings involved in the stopping, cleaning and restarting of the intermittent-running machines.

### Enemy Advertising.

This Journal is conducted in the interests of commercial and technical intercourse between Great Britain, her Allies and South Africa. Subject to the conditions of Peace, its pages will not be available for assistiug the recovery of markets for German and Austrian goods.

## PERSONAL.

Mr. F. A. Ashe, formerly of the Crown Mines and E.R.P.M., is now Navigating Lieut. of H.M.S. Imperieuse.

* * * *

Prof. Yates has been advised this mail that his brother, Mr. Arthur Yates, Lecturer on Mining at the Royal Schooi of Mines, London, has been appointed Assistant Officer-in-Charge, Ministry of Munitions, controlling the output of one of the large mining districts in the North of England.

* * * *

The death took place at Pietersburg last week of another Kimberley and Rand pioneer in the person of Mr. George Goch. He went to Kimberley in 1872, and represented the city in the Cape Assembly from 1884 to 1889. Coming to the Rand in 1886, he was connected with early ventures such as Wemmer and George Goch, and was also associated with William Knight in the Witwatersrand G.M. Co. He was Mayor of Johannesburg in 1904-5.

* * * *

The list of certificates issued by the Mines Department for the month ending 31st July, 1918, is as follows:—Mine Overseers' Certificates (Metalliferous): C. Bulford, F. J. Clark, J. R. de Klerk, C. H. Fry, J. A. Landsberg, T. E. Proberts, J. L. Winslow; (Coal) E. D. Jones (non-fiery mines only), S. Lewis. Mine Surveyors' Certificates: C. H. L. Baumann, A. S. Hersovitz. Mechanical Engineers' Certificates (Mining Machinery): A. Bath, H. R. Bevington, A. Campbell, C. Davies, S. B. Evans, A. E. Howes, J. F. Jewell, F. W. Joubert, A. H. Nesbitt, W. G. Pullock, A. E. Spiers, W. A. Wade. Mechanical Engineers' Certificates (Works only): G. Barnshaw, G. C. Brown, C. E. H. Denman, F. H. Fry. Electrical Engineers' Certificates (Mining Machinery): W. Hepburn, A. A. Rae; (Works only): M. W. de Smidt.

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## SAFETY IN WINDING OPERATIONS.—IV.

[By J. A. Vaughan, M.I.C.E.]*

With further reference to Class (3), it remains to be stated that it is a growing practice to interlock the levers on the operating systems of the brake and clutch in a similar manner to that adopted on the railways to link up signals and points. This is effected in many different ways, there being no standard method, each winding engine receiving appropriate treatment. Where the clutches are operated by steam, it is better for the purpose of the lock to utilise the movement of the clutch itself and not merely that of the slide valve of the clutch engine. Sluggish action of this engine is then provided against and it becomes impossible to unclutch a drum unless the corresponding brake is properly applied. A runaway drum, especially if of the cast-iron variety, is a very dangerous happening, similar to a flywheel explosion. The whole winding rope is usually lost, much damage may be caused to shaft track and timbering, and, if the drum fractures when the rope has run out to the end, there is great likelihood of the engine room being completely wrecked. The Eddy current brake provides an ideal method of safeguarding unclutched drums. Mr. Chambers suggested that with steam winders the existing current for the brake could be conveniently obtained from a small direct converted steam-driven generator situated in the engine room itself, but it has to be remembered that on several of the older mines, where steam winding still prevails, direct-current electricity is immediately available. The Eddy current brake does not actually stop all motion, but it brings down the speed to a low value, so that counter current or the mechanical brake can be used safely and successfully to bring the drum or the hoist to rest. After preaching the gospel of this safety brake to a leading safety-first financier the other day, the author was immediately asked the question "What is it going to cost?" In looking into this important matter it has to be acknowledged that the extra cost is serious, bringing up the price of an A.C. hoist fitted with E.C. brake to just about that of a Ward-Leonard set. Mr. Chambers stated that the cost of the E.C. brake for a five-ton hoist with a rope speed of 3,500 per minute was £2,000. Mr. J. H. Rider at the Institution of Electrical Engineers, 1915, in his paper on "The Power Supply of the Central Mining-Rand Mines Group," gave the cost (with the motor generator, etc.) as nearly two-thirds that of the winding motor. He also stated that an expenditure of energy at the rate of about 45 k.w. in the field magnet system of the E.C. brake obtained a result equal to a rate of about 1,600 k.w. in the case of counter current braking. This comparison invites the author to make a few closing remarks with respect to electric winding. The A.C. hoist can probably be made as safe as the Ward-Leonard, and doubtless when normal times return further steps will be taken in this direction. The author was present at the tests carried out on the A.C. winding hoist at the Village Deep, Ltd., when with an unbalanced load of 9,000 lbs., the speed was reduced from 3,000 to 250 feet per minute in a few seconds, one dozen being about the figure. With a Ward-Leonard set at the Consolidated Langlaagte he had the privilege to witness an important test, of which the following details give the description. The winding motor was accelerated as quickly as possible, until a normal rope speed of 2,500 feet per minute was reached; the driver was then taken off the platform and the

* Paper read before the S.A.A.A.S.


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# WRIGHT'S ROPES

**H. ALERS HANKEY - - - Sole Agent.**

hoist allowed to complete the wind with only the safety gear controlling it. The cams brought the winding drums to an almost imperceptible creeping speed, and when this speed had caused a sufficient pressure to bear on the brake trigger gear, the brakes were applied, the current cut off, and the hoist brought to rest. This test, the author is informed, is applied to the Ward-Leonard hoists of this particular group once a week. If a three-phase hoist be installed where the winding cycle is such, in ordinary balance winding, that the upward load always overbalances the downward load, then if failure of current takes place, it is obvious that before the hoist could run away the rope direction must be reversed, and the load which before the failure was being wound in an upward direction must change to a downward direction. Obviously then at some moment the load will be stationary and therefore the automatic application of the brakes will pull the hoist up and no runaway will take place, whereas if the downward load overbalanced the upward load and a failure of power took place, the direction of hoisting will not be reversed, the speed will be accelerated and the application of the brakes will be ineffectual. With the Ward-Leonard hoist, although the failure of power has taken place, the regeneration control will not be absent because the winding motor acting as a generator will raise the speed of the converter set, thus assisting the brakes to pull the hoist up. It appears therefore that, in any winding proposition in which the downward load at any period of the cycle overbalances the upward load, the Ward-Leonard type of hoist is preferable, but when the upward load predominates throughout the whole wind the three-phase motor is the more suitable. The author, in conclusion, expresses the hope that the statistics, facts and opinions contained in this short paper will tend to stimulate the " safety-first " movement, not only in the winding engine room but in the office of the consulting engineer.

Table showing, for mines of Transvaal only, shaft accidents for the years 1908-1917, with Classes I. and II. of same set forth for comparison with totals:—

| Year. | Number of Separate Accidents. | | | Casualties. | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Total. | Not Causing Personal injury. | Causing personal injury. | Deaths. | | | Injuries. | | |
| | | Under Reg. 274. | Fatal. | Non fatal. | White. | Coloured. | Total. | White. | Coloured. | Total. |
| CLASS I.—OVERWINDS OR RUNAWAYS. | | | | | | | | | | |
| 1908 | 37 | 27 | 6 | 4 | 1 | 6 | 7 | — | 5 | 5 |
| 1909 | 78 | 57 | 11 | 10 | 1 | 17 | 18 | 3 | 14 | 17 |
| 1910 | 53 | 36 | 11 | 6 | 3 | 17 | 20 | 2 | 13 | 15 |
| 1911 | 80 | 55 | 18 | 7 | 3 | 29 | 32 | 3 | 25 | 28 |
| 1912 | 75 | 56 | 10 | 9 | 4 | 27 | 31 | 5 | 20 | 25 |
| 1913 | 74 | 61 | 10 | 3 | 1 | 21 | 22 | 5 | 8 | 13 |
| 1914 | 58 | 44 | 5 | 9 | 3 | 18 | 21 | 7 | 14 | 21 |
| 1915 | 53 | 46 | 2 | 5 | — | 2 | 2 | 3 | 2 | 5 |
| 1916 | 52 | 36 | 12 | 4 | 17 | 12 | 29 | 10 | 15 | 25 |
| 1917 | 60 | 45 | 11 | 4 | 1 | 12 | 13 | 5 | 10 | 15 |
| Averages | 62·0 | 46·3 | 9·6 | 6·1 | 3·4 | 16·1 | 19·5 | 4·3 | 12·6 | 16·9 |
| Percentage of total shaft accidents | 14·3 | 60·6 | 5·8 | 3·2 | 14·1 | 9·4 | 10·0 | 8·5 | 7·0 | 7·3 |
| CLASS II.—ROPES, CHAINS OR CONNECTIONS BREAKING EXCLUSIVE OF BREAKAGES DUE TO OVERWINDS OR RUNAWAYS | | | | | | | | | | |
| 1908 | 17 | 9 | 5 | 3 | 1 | 8 | 9 | — | 6 | 6 |
| 1909 | 14 | 8 | 4 | 2 | — | 5 | 5 | — | 3 | 3 |
| 1910 | 14 | 9 | 4 | 1 | 2 | 14 | 16 | — | 1 | 1 |
| 1911 | 15 | 10 | 4 | 1 | — | 8 | 8 | 1 | 2 | 3 |
| 1912 | 11 | 8 | 1 | 2 | — | 1 | 1 | — | 4 | 4 |
| 1913 | 17 | 7 | 9 | 1 | 2 | 11 | 13 | 1 | 8 | 9 |
| 1914 | 26 | 14 | 5 | 7 | 1 | 7 | 8 | 4 | 9 | 13 |
| 1915 | 20 | 13 | 4 | 3 | 1 | 5 | 6 | — | 3 | 3 |
| 1916 | 30 | 17 | 9 | 4 | — | 16 | 16 | — | 10 | 10 |
| 1917 | 30 | 16 | 7 | 7 | 1 | 6 | 7 | 2 | 7 | 9 |
| Averages | 19·4 | 11·1 | 5·2 | 3·1 | 0·8 | 8·1 | 8·9 | 0·8 | 5·3 | 3·1 |
| Percentages of total shaft accidents | 4·5 | 14·5 | 3·1 | 1·6 | 3·3 | 4·7 | 4·6 | 1·6 | 2·9 | 2·6 |
| TOTAL SHAFT ACCIDENTS. | | | | | | | | | | |
| 1908 | 354 | 44 | 169 | 141 | 18 | 162 | 180 | 32 | 129 | 161 |
| 1909 | 481 | 113 | 206 | 162 | 24 | 200 | 224 | 47 | 148 | 195 |
| 1910 | 474 | 53 | 219 | 202 | 25 | 226 | 251 | 69 | 168 | 237 |
| 1911 | 523 | 71 | 235 | 217 | 33 | 240 | 273 | 68 | 209 | 277 |
| 1912 | 547 | 81 | 196 | 270 | 23 | 215 | 238 | 53 | 274 | 327 |
| 1913 | 456 | 92 | 152 | 212 | 26 | 164 | 190 | 57 | 203 | 260 |
| 1914 | 407 | 80 | 126 | 201 | 19 | 139 | 158 | 54 | 195 | 249 |
| 1915 | 400 | 82 | 136 | 182 | 17 | 130 | 147 | 48 | 162 | 210 |
| 1916 | 362 | 74 | 118 | 170 | 35 | 125 | 160 | 47 | 189 | 236 |
| 1917 | 319 | 74 | 112 | 133 | 21 | 105 | 126 | 31 | 133 | 164 |
| Averages | 432·3 | 76·4 | 166·9 | 189·0 | 24·1 | 170·6 | 194·7 | 50·6 | 181·0 | 231·6 |

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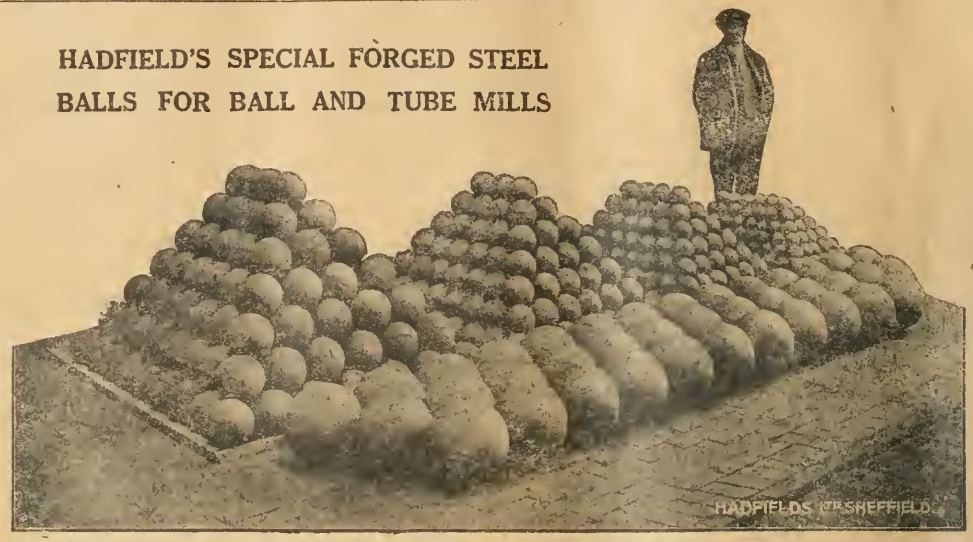


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# Rhodesian Section.

## RHODESIAN MINERAL OUTPUT FOR JULY.

We have received for publication from the office of the Rhodesia Chamber of Mines (Incorporated) the following detailed statement of the mineral output for the month of July, 1918, with comparisons and values:—

### MATABELELAND.

| | No. of stamps. | Tons treated. | Yield. Ozs. | Value. £ |
|---|---|---|---|---|
| **Bulawayo District.** | | | | |
| Abercorn (W. J. Lane) | 5 | 412 | 254·28 | 1054 |
| A.D.C. (Lochade Syn.) | 5 | 650 | 47·37 | 196 |
| Addie Iris (H.A.D. Fansley) | 2 | 55 | 29·28 | 121 |
| Anderson's (C. Brunton) clean up | F | — | 3·28 | 13 |
| Annasona (Rhodesia, Ltd.) | 3 1P | 297 | 186·36 | 773 |
| Do. (sands) | — | 434 | 155·96 | 646 |
| Antelope G.M. (Rhod.) Ltd. | 2BM 1T 6P | 3785 | 1003·39 | 4204 |
| Do. (sands) | — | 3482 | 803·13 | 3405 |
| Big Ben South (W. E. Hunt) | 2 | 100 | 43·91 | 182 |
| Bill's Luck (W. Arbery) | 5 | 850 | 137·45 | 570 |
| Bothal (W. H. Robinson) | 5 | 147 | 30·66 | 127 |
| Bushtick Mines, Ltd. | 8N 3T | 4067 | | |
| Do. (sands) | | 2294 | | |
| Do. (slimes) | | 1494 | | |
| Do. (concentrates) | | 309 | 871·21 | 3611 |
| Camp (Carson Mines, Ltd.) | 5 1P | 685 | 203·03 | 841 |
| Do. (sands) | — | 400 | 45·54 | 189 |
| Cam Stick (Iron Duke Syn. No. 2) | 3 | 250 | 86·35 | 358 |
| Do. (sands) | — | 300 | 46·20 | 191 |
| Castle Grant (F. D. Roscoe) | 3 | 30 | 12.23 | 50 |
| Cecil (Master Cecil Syn.) | 3 | 80 | 10·13 | 42 |
| Clifton (R. C. Boyes) | 5 | 210 | 18·81 | 78 |
| Durban (Durban Syn.) | 5 | 423 | 222·40 | 922 |
| Do. (sands) | — | 264 | 64·27 | 266 |
| Eagle Hawk (P. Berwitz) | 5 | 220 | 70·93 | 294 |
| Fred (Trans. & Rhod. Syn.) | 10 2P | 1950 | 1047·27 | 4341 |
| Do. (sands) | — | 1950 | 342·17 | 1418 |
| Germania (A. G. Hadingham) | 2N 2P | 355 | 44·42 | 184 |
| ,, Adjst. June and July, 1917 | — | — | — | 120 |
| Horn (Horn Reef Syn.) | 387 | | | |
| Do. (sands) | 238 | 5 | 198·43 | 822 |
| Iron Duke (Iron Duke Syn.) Adj. June | — | — | — | 1 |
| Jeffs (Jeffs, Ltd.), clean up | — | — | 4·48 | 19 |
| Jenny (Jenny Syn.) pannings | — | — | ·93 | 4 |
| Jessie (Jessie Tributors) | 10 2P | 1070 | 275·54 | 1142 |
| Do. (sands) | — | 794 | 41·96 | 174 |
| Jumpers (J. P. McCay) | 5 | 350 | 116·94 | 485 |
| Do. (sands) | — | 224 | 32·38 | 134 |
| Lohely Reef G.M. Co., Ltd. | 20 3T | 5050 | 1682·00 | 6973 |
| Do. (slimes) | — | 5050 | 2626·70 | 10897 |
| Matabele Queen's Co., Ltd. | 10 2P | 1324 | 463·55 | 1922 |
| Do. (sands) | — | 1324 | 149·33 | 619 |
| Matabele Sheba (Mazoe Mines, Ltd) clean up | | | 2·12 | 9 |
| Mount Rosa (R. J. Maidwell) | 3 | 67 | 26·77 | 111 |
| Near By (R. Innes) | 3 | 10 | 6.16 | 26 |
| New Eclipse (J. R. Stewart) | 5 1T | 1200 | 591·17 | 2451 |
| Do. (sands) | — | 792 | 71·53 | 297 |
| Newtonfontein (A. H. Newton) | 3 | 420 | 472·99 | 1961 |
| Do. (sands) | — | 180 | 90·20 | 374 |
| Other sources of adjustment June | — | — | — | 82 |
| Princess 2 (C. A. Abbott) | 2 | 180 | 17.94 | 74 |
| Red Boy (H. Lunnun) | 5 | 32 | 20·53 | 85 |
| Red Rose (F. C. Barrett) | 5 | 315 | 245·86 | 1019 |
| Red Rose, balance June | — | — | 47·43 | 197 |
| Rewi (Intabanenda Syn.) | 5 | 300 | 114·05 | 473 |
| Rhodesian Queen (Gilpin & Pickles) | 5 | 30 | 13.81 | 57 |
| Sabi (Fletcher & Williamson) | 15 | 1491 | 216·88 | 899 |
| Do. (sands) | — | — | 247·41 | 1026 |
| Sabla A (R. C. Boyes) June | 5 | 471 | 141·32 | 586 |
| Sable A, July clean clean up | — | 102 | 27·52 | 114 |
| Spruit (N. Macdonald) sluicing | — | 500 | 14·41 | 60 |
| Star (Eastern Queen), (Romola Nigel G.M. Co.), sands | 5 | 404 | 56·37 | 234 |
| Do. (sands) | — | 208 | 33·72 | 140 |
| Stock's Luck B (E. W. Bosomworth) | 5 | 400 | 85 63 | 355 |
| Do. (sands) | — | 450 | 25·06 | 104 |
| Tartan (G. Leask) June | (5) | 170 | 18.00 | 75 |
| Do. (sands) | — | 200 | 15·32 | 64 |
| Do. (sands) July | 5 | 90 | 3·83 | 16 |
| Weka (E. C. Smythe) | 3 | 245 | 62.46 | 259 |
| Winifred | 3 | 80 | 37·47 | 155 |
| **Bulawayo District Total** | | | 14,080·23 | 58,741 |

**Gwelo District.**

| | No. of stamps. | Tons treated. | Yield. Ozs. | Value. £ |
|---|---|---|---|---|
| Acacia (W. & G. Hogg) | 2 | 100 | 52·32 | 217 |
| Bell Reef Dev. Co., Ltd. | F | — | 11·45 | 46 |
| Do. (July and Sept., 1917) | — | — | — | 27 |
| Bonsor B 323 (R. C. Smith April clean up | — | — | 3·83 | 15 |
| Chicago 2 (A. Fraser) June | (3) | 240 | 81·59 | 338 |
| Do. (sands) | 3 | 100 | 24.92 | 103 |
| Commonage (H. W. Gray) | 1T | 293 | 52·66 | 218 |
| Connemara (Connemara Syd.) | 20RP | 2829 | 112·61 | 467 |
| Do. (sands) | — | 2238 | 736·73 | 3066 |
| Do. (slimes) | — | 691 | 97.35 | 404 |
| Conqueror (Leppington & McConkey) | 5 | 200 | 120·34 | 499 |
| Csardas (Wolfshall Syn.) | 10 | 470 | 180·15 | 747 |
| Do. (sands) | — | 1070 | 77·46 | 321 |
| Danga and Chimboraza (Wonderland Trib. Syn.) | 51P | 712 | 213·43 | 885 |
| Do. (sands) | — | 350 | 63·63 | 264 |
| Dixie (Dixie Syn.) March, 1917 | — | — | — | 4 |
| Falcon Mines, Ltd., with adjust. (Copper and silver values not given). | 27N 2T | 6021 | 3587·18 | 16605 |
| Fed Up (A. Malcolm) | 5 | 170 | 145·67 | 604 |
| Gaika G.M. Co., Ltd. | 5 1C 1T | 3283 | 718·10 | 3052 |
| Do. (sands) | — | 3990 | 562·66 | 2387 |
| Do. balance June | — | — | 40·00 | 170 |
| Do. June, 1917 | — | — | — | 49 |
| Giraffe (Hosie & Benney) | (5) | 90 | 27·38 | 113 |
| Glen Arrock (Glen Arrock Syn.) June | (5) | 24 | 26·04 | 108 |
| Do. (sands) | 5 | 60 | 89·02 | 369 |
| Globe & Phoenix G.M. Co. Ltd. | 40 12P | 6741 | 6394·85 | 26858 |
| Do. (sands) | — | 9932 | 1892·22 | 7947 |
| Do. (slimes) | — | 2384 | 466·53 | 1960 |
| Gothic (Murray & Kennedy) | 10 1P | 250 | 44·92 | 186 |
| Do. (sands) | — | 165 | | |
| Do. (slimes) | — | 142 | 60·94 | 253 |
| Loyalist (B. Bertoldi) sands | — | 282 | 45·31 | 188 |
| Moss (W. M. James) | 5 | 964 | 341·93 | 1417 |
| Nevada G (F. C. Luxat) | H | 900 | 68·88 | 286 |
| Do. (sands) | — | 540 | 14·88 | 62 |
| Robin Hood (Gaika G.M. Co., Ltd.) | (5) 1C 1T | 151 | 139·44 | 586 |
| Royalist (J. Austen) | 5 | 680 | 289·17 | 1199 |
| Rutland (H. K. Havnar) | 2 | 80 | 51·34 | 213 |
| Snark (J. G. Walter) | 5 | 150 | 7·85 | 32 |
| Second Trial I (J. Rainsford) June | (2) | 30 | 5·53 | 23 |
| Do. (sands) | 2 | 17 | 4·48 | 18 |
| Smith's Pocket (R. C. Smith) | 5 | 105 | 54·17 | 225 |
| Tebekwe (A. N. Tyrell) (sands) | — | 1000 | 43·76 | 181 |
| Veracity (L. R. Evans) | 5 | 560 | 133·26 | 552 |
| Do. (sands) | — | 560 | 44·98 | 186 |
| Wanderer. (Selukwe) G.M., Ltd. | 4GR | 14230 | 886·40 | 3675 |
| Warner G. (R. C. Smith) | 5 | 240 | 33·62 | 140 |
| Zabunkwe (Holmes & Urquhart) | 5 | 750 | | |
| Do. (sands) | — | 550 | | |
| Do. (slimes) | — | 200 | 128·30 | 532 |
| Gwelo District Total | | | 18,180·48 | 77,797 |

**Umtali District.**

| | No. of stamps. | Tons treated. | Yield. Ozs. | Value. £ |
|---|---|---|---|---|
| Bessie & Gem (J. Buchanan) adjustment Nov. and Dec., 1916 | — | — | 10·25 | 74 |
| Gem (J. Buchanan) | 5 | 825 | 28·01 | 116 |
| Do. (sands) | — | 825 | 173·71 | 719 |
| Elgin (Meikle & Davis) | 5 | 1028 | 135·66 | 562 |
| Do. (sands) | — | 420 | | |
| Do. (slimes) | — | 300 | 72·54 | 301 |
| Liverpool (R. G. Snodgrass) | 5 | 790 | 152·57 | 632 |
| Do. (sands) | — | 450 | 36·58 | 152 |
| Do. (concentrates) | F | 1·35 | 114·15 | 457 |
| Lucknow D.B.I.E. (Toronto Syn.) | 2N | 600 | 94·07 | 390 |
| Do. (sands) | — | 190 | 38·26 | 159 |
| Pilgrim 2E (F. R. Myburg) | 5 | 145 | 27·95 | 116 |
| Rezende DB1 | — | 850 | 71·46 | 296 |
| Do. (sands) | — | 190 | 19·38 | 80 |
| Rezende Mines, Ltd. | 40 | 5200 | 1331·57 | 5650 |
| Do. (sands) | — | 3555 | 410·25 | 1741 |
| Do. (slimes) | — | 1403 | 452·20 | 1919 |
| Do. (concentrates) | — | 139 | 418·90 | 1777 |
| **Umtali District Total** | | | 3,587·49 | 15,141 |

## MASHONALAND.

### Hartley District.

| | No. of stamps. | Tons treated. | Yield. ozs. | Value. £ |
|---|---|---|---|---|
| Acorn (Anzac Syn.) June | (5) | 377 | 118·68 | 492 |
| Do. (sands) | — | 283 | 54·63 | 226 |
| Do. June | 5 | 377 | 121·07 | 502 |
| Do. (sands) | — | 283 | 48·25 | 200 |
| Alexander (Alexandra Syn.) June | (5) | 215 | 51·44 | 213 |
| Do. (sands) | — | 200 | 31·78 | 132 |
| Do. (sands) July | 5 | 300 | 28·46 | 172 |
| Axe (J. Davidson) | 3 | 80 | 21·14 | 88 |
| Brilliant (S. L. Syn) crucible liners | F | — | — | 4 |
| Cam & Motor G.M. Co., Ltd | RP | 12884 | 4299·54 | 18230 |
| Eiffel Blue (Willoughby's Con. Co., Ltd.) | 10 | 1356 | 523·62 | 2171 |
| Do. (sands) | — | 700 | 34·28 | 142 |
| Do. (Tailings Ltd.), slimes June | — | 1443 | 77·15 | 320 |
| Do. (Tailings Ltd.), slimes July | — | 1440 | 63·74 | 264 |
| Enney Ext. (E. G. Goodyer) | 5 | 325 | 107·85 | 447 |
| Do. (sands) | — | 280 | 25·22 | 104 |
| Etna & Tsesesebe (Macfarlane and Cleaham) | C | 500 | 134·95 | 559 |
| Eureka (E. C. Goodyet) sands | — | 100 | 9·44 | 40 |
| Glasgow Mines, Ltd. | 5 | 380 | 140·53 | 583 |
| Do. (sands) | — | 196 | 29·04 | 120 |
| Golden Valley (John Mack & Co.) | 10 1P | 1210 | 318·58 | 1321 |
| Do. (sands) | — | 665 | 137·52 | 570 |
| Do. (slimes) | — | 830 | 86·09 | 357 |
| Heroine (A. E. Ward) June sands | — | 250 | 56·53 | 234 |
| Inkerman (I. J. Minaar) | 5 | 210 | 75·82 | 314 |
| Do. (sands) | — | 180 | 20·09 | 83 |
| Jackie's Luck (Mrs. Sarah Smith) | 2 | 48 | 24·32 | 101 |
| Just in Time (C. Somerset) | 2 | 278 | 67·14 | 278 |
| Kanyemba (Kanyemba Syn.) | 10 | 545 | 265·31 | 1100 |
| Do. (sands) | — | 396 | 76·08 | 324 |
| Kelvin (Westoc Syn.) | — | 200 | 22·96 | 95 |
| Lion (J. Baker) | 2 | 156 | 50·45 | 209 |
| Lion's Den (F. H. Dalton) June final clean up | — | — | 16·47 | 68 |
| Mali (J. Thornett) | 3 | 784 | 43·27 | 179 |
| Mountain Dew (A. & J. Milne) | 10 | 300 | 155·20 | 643 |
| Owl (A. Rolfe) June | (10) | 1101 | 284·40 | 1179 |
| Do. (sands) | — | 950 | 99·44 | 412 |
| Do. July | 10 | 1104 | 236·70 | 981 |
| Do. (sands) | — | 961 | | |
| Do. (slimes) | — | 320 | 134·51 | 558 |
| Owl Ext. (Cribb & Seear) | 10 | 1050 | 156·06 | 647 |
| Do. (sands) | — | 680 | 54·34 | 225 |
| Pickstone G.M. Ltd. June slimes | — | 2197 | 149·92 | 621 |
| Do. July | 10 1T | 395 | | |
| Do. (sands) | — | 395 | 184·27 | 764 |
| Pomposo (J. Knott) (sands) | — | 450 | 42·26 | 175 |
| Redwing (R. S. Milne) June | 5 | 64 | 58·11 | 241 |
| Revie (Ambrose & Aitken) | 5 | 767 | 143·29 | 594 |
| Do. (sands) | — | 577 | 33·41 | 138 |
| Rouge (Dreadnonght Syn.) slimes | — | 500 | 27·04 | 112 |
| Shepherds (Phoenician R. Co.,) Ltd.), March, 1917 | F | — | — | 19 |
| Shepherds (Begbis & Jackson) | 5 | 608 | 182·39 | 756 |
| Do. (sands) | — | 626 | 194·81 | 808 |
| Solpex (E. Sedgwick) | (5) | 69 | 29·65 | 123 |
| St. Louis (A. J. Van Breda) June sands | — | 338 | 18·27 | 76 |
| St. Louis (A. J. Van Breda) July sands | — | 312 | 15·84 | 66 |
| Tiger (Clark & Blackburn) | 5 | 290 | 43·07 | 179 |
| Tsesesebe E. Ext. (Ullyett & Seear) | 5 | 528 | 84·04 | 265 |
| Victory (J. G. Volk) | 5 | 220 | 41·15 | 170 |
| Do. (sands) | — | 200 | 16·61 | 69 |
| Washington (I. J. Minaar) June | (5) | 450 | 364·38 | 1511 |
| Do. (sands) | — | 360 | 40·54 | 168 |
| Do. July | 5 | 210 | 75·82 | 314 |
| Do. (sands) | — | 180 | 20·09 | 83 |
| Welcome Friend (H. F. Fry), pannings | — | — | 3·77 | 16 |
| What Cheer (H. Moser) | 10 | 740 | 170·02 | 705 |
| Do. (sands) | — | 525 | 64·35 | 267 |
| Hartley District Total | | | 10,287·19 | 43,127 |

### Lomagundi District.

| | No. of stamps. | Tons treated. | Yield. ozs. | Value. £ |
|---|---|---|---|---|
| Alluvial (5 producers) | — | — | 78·57 | 326 |
| Angwa B (F. L. Standen) | 5 | 720 | 60·49 | 251 |
| Anglian (Schapke & Quarrie) | 5 | 210 | 84·74 | 351 |
| Crescent (Crescent Syn.) | F | 89 | 12·38 | 50 |
| Do. adjst. June, July, Aug., 1917 | — | — | — | 17 |
| Eldorado Bkt. G.M. Co. | 20 4C 4P | 5260 | 1750·14 | 7427 |
| Do. (sands) | — | 2816 | | |
| Do. (slimes) | — | 2300 | 1023·32 | 4340 |
| Gloria (Gloria Syn.) | 5 | 300 | 45·13 | 187 |
| Golden Kopje Proprietary Mines, Ltd., adjustment, May, 1917 | F | — | — | 62 |
| Maggiemac (J. McMurdon) | 5 | 540 | 85·17 | 353 |
| Do. (sands) | — | 420 | 32·04 | 133 |
| Silverside (Silverside Syn.) | F | — | 4·23 | 17 |
| Do. adjst. May & July, 1917 | — | — | — | 1 |
| Lomangundi District Total | | — | 3,176·21 | 13.515 |

### Mazoe District.

| | No. of stamps. | Tons treated. | Yield. ozs. | Value. £ |
|---|---|---|---|---|
| Day Dawn (Day Dawn Trib.), slags, June, 1917 | F | — | — | 3 |
| Iron 1 (J. M. Laing) | 5 | 814 | 96·97 | 402 |
| Do. (sands) | — | 400 | 49·94 | 207 |
| Jumbo INW (N. Irvine) | 5 | 512 | 92·43 | 673 |
| Do. (sands) | — | 224 | 46·60 | 193 |
| Kimberley (Mash.) G. M. Co., Ltd., balance clean up June | — | — | 1·15 | 5 |
| Kingsley Howard (A. S. Warwick) June | 5 | — | 44·28 | 184 |
| Maori Chief (D. MacLean) | 5 | 197 | 63·19 | 262 |
| Mildred (Rose & Cooke) | 2 | 204 | 26·41 | 109 |
| Peveril of Peak (G. G. N. Southey) | 2 | 160 | 36·33 | 151 |
| Promoter (F. C. Croxford) | C | 2750 | 88·53 | 367 |
| Do. (sands) | — | 1875 | 47·85 | 198 |
| Rosa (R. Aserman) | C | 1800 | 119·99 | 497 |
| Do. (sands) | — | 950 | 21·73 | 90 |
| Rothschild (Cunningham & Allison) | 10 | 455 | 303 37 | 1258 |
| Mazoe District Total | | | 1,038·77 | 4,605 |

### Salisbury District.

| | No. of stamps. | Tons treated. | Yield. ozs. | Value. £ |
|---|---|---|---|---|
| Alpes (P. Zaffere) | 5 | 120 | 110·33 | 457 |
| Do. (sands) | — | 200 | 23·27 | 97 |
| City (Abercorn Banket Tributs) | 5 | 100 | 4·62 | 19 |
| Cross Your Luck (W. A. Hoole) slags | — | 284 | 83·19 | 138 |
| Excelsior (Broodryk & Mangan) | 5 | 2 | 3·58 | 15 |
| Found A, bal. June final clean up | — | — | 7·69 | 32 |
| Inyague (P. Zaffera) | 2 | 200 | 57·91 | 240 |
| Joker (R. L. Mann) | H | 75 | 11·43 | 47 |
| Joking & Euchred (Harrison & Drabble) | 8 | 1163 | 366·66 | 1520 |
| Do. (sands) June and July | — | 720 | 34·04 | 141 |
| Joyce (Ellsmoor & Wyper) | 5 | 571 | 90·14 | 374 |
| Left Bower (B. G. Byerley) | 5 | 441 | 205·42 | 852 |
| New Full Back (W. B. Maris) | 2 | 54 | 24·24 | 100 |
| Olympus C. (L. Hyland), clean up battery site | — | — | 44·94 | 186 |
| Planet (Planet Mine Tribute) | 5 1T | 695 | 132·35 | 549 |
| Do. (sands) | — | 1779 | 211·12 | 875 |
| Shamva Mines, Ltd. | 56N 10T | 48550 | 2395·10 | 10155 |
| Do. (sands) | — | 19531 | | |
| Do. (slimes) | — | 27893 | 4634·00 | 19648 |
| Do. (slags), May and July, 1917 | F | — | — | 84 |
| Southern Cross (Arab Syn.), sands balance June | — | 200 | 24·81 | 103 |
| Southern Cross (Arab Syn.) | 2 | 117 | 33·16 | 137 |
| Trio (Trio Syn.) | 5 | 360 | 121·42 | 503 |
| Do. (sands) | — | 415 | 23·69 | 99 |
| Salisbury District Total | | — | 8,593·31 | 36321 |

### Victoria District.

| | No. of stamps. | Tons treated. | Yield. ozs. | Value. £ |
|---|---|---|---|---|
| Cambrian (J. & D. Laing) | 10 | 700 | 232·76 | 965 |
| Do. (sands) | — | 500 | 118·64 | 492 |
| Cotopaxi (T. Morris & W. Hamilton) | 2 | 100 | 35·24 | 146 |
| Empress (S.A. Pros. & Con Syn.) | 8 | 1200 | 100·34 | 416 |
| Do. (sands) | 800 | — | | |
| Do. (slimes) | — | 400 | 85·09 | 353 |
| Gipsy S.A. Taylor) sands | — | 400 | 29·35 | 121 |
| Victoria District Total | | | 601·42 | 2,493 |

P., Grinding Pan; B.M., Ball Mill; T., Tube Mill; H., Huntington Mill; G.R., Cates' Rolls; B., Ball Mill; Pn., Pneumatic Stamp; N., Nissen Stamp; C., Chilian Mill; R.P., Roasting Plant; F., Treated at Falcon Mine; W.M., Waterfall Mill; L.M., Lane Mill.

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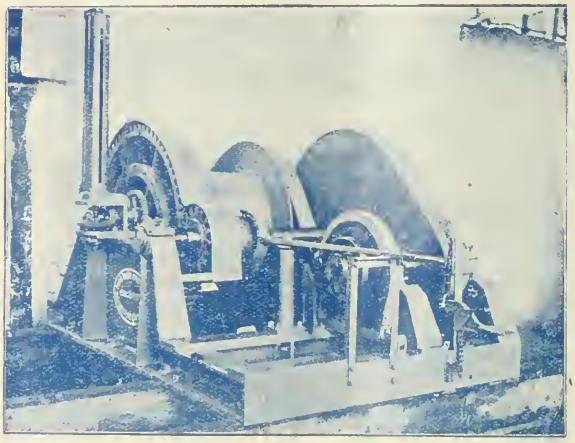

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